

Exploring the adaptation and implementation of lean practices into HE collaborative partnerships information flow processes: Readiness for change, capabilities and data integrity of UK Universities.

By

Martin Gilbert

June 2025

**A thesis submitted to in partial fulfilment of the requirement of
Birmingham City University
for the degree of Doctor of Philosophy**

Declaration

This thesis is submitted to fulfil the completion requirement for the degree of Doctor of Philosophy at the Birmingham City University Business School. I hereby declare that the entire thesis is my own original work except for quotations and citations which I have acknowledged accordingly. I also declare that this work has not been submitted to any other university or institution for any other purpose. I am responsible for any errors and omissions present in this thesis.

Signed

A handwritten signature in black ink, appearing to read 'Martin Gilbert', with a stylized, cursive script.

Martin Gilbert

June 2025

Acknowledgement

I would like to acknowledge the support and overall help from several people playing a key part in the completion of this thesis. The initial years of this journey were shaped and influenced by Dr Shishank Shishank and Dr Bruce Philp along with Dr Samuel Osei-Nimo, who then supported and guided the concluding 3 years of this thesis. Without their expert guidance and advice, this thesis would have never been written. The completion of this thesis has been heavily influenced with the support of my main supervisor Dr. Samuel Osei-Nimo, helping me to address some of the concerns but also the academic rationale of such a significant qualification. Dr. Osei-Nimo has always offered encouragement whilst instilling the confidence to develop my line of thinking and approach to the data collection and analysis, further enhancing my research skills and abilities.

Finally, to my daughter Ellie who without knowing, has been a source of inspiration, drive and determination. She too is following the academic route to her future growth and success, the end result being that we can both achieve the title of Doctor of Philosophy, or as she alludes to in my case, Doc Martin.

Abstract

This thesis investigates the potential application of Lean principles, specifically the philosophy of Kaizen, to enhance information exchange within Higher Education (HE) collaborative partnerships. Drawing upon extensive professional experience in both manufacturing and Higher Education, the research is informed by the recognition that while Lean methodologies have been widely adopted in manufacturing and increasingly within service sectors such as healthcare, their application to collaborative partnership management in Higher Education remains limited. The study therefore seeks to address this gap by exploring the feasibility and value of adopting a Lean approach to information exchange between universities and their collaborative partners.

A qualitative, grounded research strategy was employed using a cross-sectional design. Primary data were collected at three distinct stages through an informal focus group, an online questionnaire, and semi-structured interviews involving participants from Higher Education institutions. Data were analysed using thematic analysis supported by NVivo software and an iterative coding process, enabling the identification of key themes relating to organisational change, communication practices, and process improvement.

The findings demonstrate that although initial expectations centred on assessing institutional readiness for Lean implementation, the emergence of the COVID-19 pandemic fundamentally altered the research context. The rapid transition from face-to-face to online teaching across Higher Education institutions provided compelling evidence of the sector's capacity for large-scale organisational change when driven by necessity. This experience challenged traditional perceptions of resistance to change and revealed an increased recognition among academic and professional staff of the efficiencies and opportunities afforded by revised processes and digital methods of information exchange.

Building upon these findings, the research proposes a conceptual model for Lean information exchange within Higher Education collaborative partnerships. The model, evaluated throughout the study, provides a framework for improving communication, enhancing operational efficiency, and supporting sustainable partnership management. This thesis contributes to knowledge by extending the application of Lean and Kaizen principles to an underexplored area of Higher Education practice and by demonstrating how reactive organisational change can create conditions for longer-term process improvement and innovation within collaborative partnership environments.

Conferences

Conference developmental paper

Gilbert, M and Osei-Nimo, S (2022) Collaborative educational partnerships in Covid-19 times: A lean approach to change and the 'new normal'. In: *BAM2022 Conference Proceedings*. Manchester: British Academy of Management

Table of Contents

Declaration	2
Acknowledgement	3
Abstract	4
Conferences	5
Chapter One: Introduction	11
1.1 Introduction	11
1.2 Research background	12
1.3 Problem statement.....	15
1.4 Research Aim.....	16
1.5 Research objectives	16
1.6 Research questions	16
1.7 Scope of the study	17
1.8 Institutional and geographical scope	17
1.9 Research significance	18
1.10 Academic significance	18
1.11 Practical significance.....	19
1.12 Research methodology	19
1.13 Structure of the Thesis	20
1.14 Chapter summary.....	21
Chapter Two: Literature review	22
2.1 Introduction	22
2.2 History of collaborations	22
2.3 The difference between collaboration and partnerships	25
2.3.1 Collaboration: A Process-Oriented Approach.....	25
2.3.2 Partnership: A Formalised Relationship	26
2.3.3 Collaboration and Partnership in Academic Literature	26
2.3.4 Partnerships as Strategic Alliances	27
2.3.5 Characteristics and Key Differences Between Collaboration and Partnership	27
2.3.6 Resource Sharing and Risk Management.....	28
2.4 Collaboration and Partnership in Different Sectors	29
2.4.1 Industry based collaborative partnerships	31
2.4.2 Defining Industry-Based Collaborative Partnerships	31
2.4.3 Types of Industry-Based Collaborative Partnerships.....	31
2.4.4 Innovation and Research & Development	32

2.4.5 Enhanced Competitiveness	33
2.4.6 Misaligned Objectives	34
2.4.7 Intellectual Property and Ownership Issues	34
2.5 Educational-based collaborative partnerships	36
2.5.1 Defining Educational-Based Collaborative Partnerships	37
2.5.2 Types of Educational-Based Collaborative Partnerships.....	37
2.5.3 Benefits of Educational-Based Collaborative Partnerships	38
2.5.4 Challenges of Educational-Based Collaborative Partnerships	40
2.6 The Rise of Higher Education Partnerships	42
2.6.1 The Evolution of Higher Education Partnerships	43
2.6.2 Types of Higher Education Partnerships	44
2.6.7 Drivers of the Rise of Higher Education Partnerships	45
2.6.8 Benefits of Higher Education Partnerships	47
2.7 Post-compulsory education collaboration for Higher Education and Private Education providers.....	49
2.7.1 The Evolution of Post-Compulsory Education	49
2.7.2 The Rise of Collaboration Between Higher Education and Private Providers .	50
2.7.3 Models of Collaboration in Post-Compulsory Education.....	51
2.7.4 Benefits of Collaboration in Post-Compulsory Education	52
2.7.5 Challenges of Collaboration in Post-Compulsory Education	53
2.8 Reform in Higher Education and the Need for Change	53
2.8.1 Areas Requiring Reform in Higher Education.....	55
2.8.2 Reform Strategies in Higher Education	57
2.9 Lean in the Service Sector	61
2.9.1 Challenges of Implementing Lean in the Service Sector	65
2.9.2 Strategies for Successful Lean Implementation in Services	66
2.9.3 Impact of Lean on Service Quality and Operational Efficiency	67
2.10 Lean in Higher Education	68
2.10.1 Challenges of Implementing Lean in Higher Education.....	71
2.10.2 Higher Education Preparedness for Change	73
2.11 Theoretical Framework.....	79
2.11.1 Technology Acceptance Model (TAM)	80
2.11.2 The Five Core Constructs of TAM.....	83
2.11.3 TAM and Change Management	84
2.11.4 Application of TAM in Change Management	85
2.11.5 Lewin's Change Model	86
2.12 Conceptual Framework	91

2.12.1 Readiness Factors	93
2.12.2 Critical Success Factors	96
2.12.3 Capabilities for lean adoption	98
2.12.4 Data integrity in Higher Education partnerships	100
2.12.5 Lean implementation strategies.....	102
2.12.5 Efficiency and effectiveness in Higher Education information flow	105
 Chapter Three: Research Methodology	 109
3.1 Introduction	109
3.2 Research Aim and objectives	113
3.3 Research questions.....	114
3.4 The Research Methodology	115
3.5 Research philosophies	119
3.6 Research Approaches	121
3.6.1 Inductive Research Approach	121
3.6.2 Deductive Research Approach.....	121
3.7 Justification of approach.....	122
3.8 Research strategies	124
3.9 Data collection.....	127
3.10 Sampling	129
3.11 Data quality and analysis	136
3.11.1 Data quality	136
3.11.2 Data analysis.....	138
3.12 Justification of approach.....	141
3.13 Participants	143
3.14 Interviews	144
3.15 Ethical Considerations.....	145
3.16 Chapter Summary	146
 Chapter Four: Analysis and results	 147
4.1 Introduction	147
4.2 Interview analysis	148
4.3 Themes identified from the data collection	151
4.3.1 Theme 1: Lean and Agile not being a new concept to the participants and in some cases the participants had used the tools and techniques of lean.....	151
4.3.2 Theme 2: Change should be more of a focus in Higher Education (identifying the need for change)	155

4.3.3 Theme 3: <i>Processes should be constantly reviewed with the aim of improvement</i>	162
4.3.4 Theme 4: There are significant amounts of information in constant exchange between collaborative partners but with little apparent regard for streamlining this and increasing efficiencies	167
4.3.5 Theme 5: Crisis management and Business Continuity Planning (BCP)	175
Chapter Five: Discussion	179
5.1 Introduction	179
5.2 Focus group – data collection 1	180
5.3 Online questionnaire – data collection 2.....	180
5.4 Theme 1 – The Covid crisis has impacted Collaborative practices	183
5.5 Theme 2 – A lasting change for online delivery and modes of teaching.....	184
5.6 Theme 3 - Challenges faced as a direct result of the pandemic.....	185
5.7 Theme 4 – The requirement of rapid and reactive change to combat the pandemic.....	187
5.8 Theme 5 – The collaboration has been enhanced and greater competence & efficiency developed through this learning journey.....	188
5.9 Theme 6 - HE partnerships have supported the QAHE business model.....	189
5.10 Reactive adaptive model	190
5.11 Semi-structured interviews – data collection 3	193
5.12 Chapter summary.....	198
Chapter Six: Interim Implementation and Evaluation of recommendations in a selected case study	200
6.1 Introduction	200
6.1.1 Pre – March 2020	200
6.1.2 The Status Quo	201
6.1.3 Application and validation of the conceptual model.....	211
6.1.4 Data Integrity in HE partnerships.....	216
6.1.5 Lean implementation strategies.....	217
6.1.6 Efficiency and effectiveness in Higher Education information flow	217
6.1.7 Chapter summary	220
Chapter Seven: Conclusion and recommendations	222
7.1 Introduction	222
7.2 Summary of main findings.....	222
7.3 Contribution to knowledge.....	224
7.4 Reflection on limitations	225

7.5 Implications for theory and practice	225
7.6 Future research	228
Chapter 8: References	228
Chapter 9: Appendices	234
Table 4: Interviewee details	136
Table 5: Participant roles, locations and code allocations	141
Table 6: Process 1 marking and moderation prior to covid	196
Table 7: Process 2 exam boards prior to covid	197
Table 8: Process 1 marking and moderation changes during covid	198
Table 9: Process 2 exam board changes during covid	199
List of Figures	
Fig 1: Conceptual framework	85
Fig 2: Saunders Research Onion	112
Fig 3: Methodological process	136
Fig 4: Approval of lean and agile	142
Fig 5: Analytical framework	144

Chapter One: Introduction

1.1 Introduction

Higher education is currently undergoing significant change and transformation, much like numerous other industries and sectors. Higher Education is now more accessible than ever to a greater number of people, in more locations, and through more methods than ever before, this increased accessibility perhaps causing the purpose, methods, and content of higher education to be questioned (Gleason, 2018). At a time of essential change in higher education (HE) across Europe, HE reforms provide a compelling comparison to better understand the evolution of the sector (European Commission, 2021). The Research Observatory located in Europe carefully monitors and analyses such reforms in EU states and serves as a crucial reference and key source of information for European and national policymakers as well as other stakeholders (European Commission, 2021). Recent changes in European Universities act as a testing ground for the necessary transformation of HE in Europe, particularly in newer EU states.

Higher education has experienced remarkable changes over the past twenty years, reflecting broader global trends such as greater inclusivity, diverse fields of study, multiple university missions, and the digitalisation of various quality aspects (Krucken, 2014; Tomte et al, 2019). These reforms have prompted governance-related questions, challenging traditional regulation and self-governance methods. Emerging actors such as accreditation and evaluation bodies along with university exam boards are now playing an increasing role in the change process (Bates, 2015; Selwyn, 2016). Significant transformations are evident within the university environment. The university is evolving into a structured and goal-driven entity that competes on a national and global scale with an increasing emphasis on management and leadership. These changes have been instigated by policies at both national and European levels, aimed at enhancing the competitive edge of universities (Siemens et al, 2015).

Digitalisation of education has also been part of such reform involving various aspects of quality, ranging from organisational issues, technological infrastructure to pedagogical approaches (Bates, 2015; Selwyn, 2016). Therefore, it is essential for researchers in higher education to carefully consider these implications. Additionally, in other European nations, it is conceivable that the upcoming decade will be defined not by sweeping and ambitious initiatives seen in the past two decades, but by endeavours focused on refining previous

reforms, adjusting regulations, and recalibrating the substantial changes implemented during this period.

The HE sector has evolved and changed in such a way that enables it to offer its products that would usually only be available in its home country to potential students throughout the world. Universities in the UK can now offer a range of courses in the Middle East, Europe and Asia with the same level of quality for both delivery and student experience. Achieving such a service in a variety of locations, languages and cultures is by no means an easy thing to do. In order to remain competitive in such a fast-moving and demanding environment, HE Institutions are now exploring new methods of delivering their provision for courses that are now being tailored to different industries as well as a variety of countries (Rosin et al, 2020). In developing this offering and provision however, Institutions are now forming collaborative partnerships that will share their vision and long-term goals, whilst giving both parties an opportunity for growth and longevity. As these partnerships develop and flourish, the need for a more strategic approach is emerging that will address the operational elements and help it to become more efficient in the way that the collaboration functions (Hashim, 2022).

One such strategy could be that of an ideal or philosophy known as 'Lean Six Sigma'. Historically 'Lean' and 'Six Sigma' have been synonymous with manufacturing industries and in particular those relating to the production of cars. The most successful and widely advertised manufacturer adopting these principles would be Toyota. The term relates to the systematic identification and elimination of 'waste' within a process or procedure and then adopting a standardised approach to ultimately reduce or eliminate variation and variability. It could be assumed that not all providers within this sector have access to assets or resources that would allow the pursual of such an initiative, but the ever-increasing nature of competition cannot be ignored (Sones et al, 2009). Competition in any industry is crucial but in the service sector the need to adopt previously unavailable or unacceptable methods is becoming more obvious. HE Institutions will undoubtedly have individual or prescribed initiatives for improving or enhancing their provision but the adoption of a completely new discipline within this sector is rare and in part, justifies the need for research.

1.2 Research background

Collaborative partnerships between private providers and mainstream universities is a model that has developed and become more popular throughout many countries. In the UK many mainstream Universities have and are continuing to collaborate with providers throughout many countries and other parts of the UK to strengthen their own global presence and future

success (Ayoubi and Massoud, 2011). Ali et al (2014) state that Higher Education Institutions (HEI's) are partnerships developed between parties to take advantage of each others physical and intellectual resources as well as knowledge and expertise, thus allowing each to increase or expand their own capacities and capabilities (Olssen and Peters, 2005). Operational costs are also an important factor and consideration for such collaborations, allowing scope to add even more value to what each can offer in terms of products or services. Many HEI's are realising the benefits that collaborative partnerships can bring and so look to expand their own market presence and customer base.

Butcher et al (2011) suggest that, whilst working together to develop the quantity and quality of respective outcomes, the exchange of information required is not always an easy thing to do or control. Each respective HEI will have its own unique attributes and traits; culture, size, accessibility and reputation being just a few examples that can be open to interpretation and as such present the partners with ongoing challenges. These challenges are seen as crucial elements for the continuation of the partnership and as such need to be addressed and overcome effectively.

The combination of lean and six sigma (LSS) could be seen as the most suited approach for its introduction into the education sector but would need to be examined and scrutinised for both enablers and barriers. Anthony (2014) makes reference to the fact that organisations are constantly looking to find a balance between quality, cost and delivery, the last two decades having shown an increasing pressure placed on firms by consumers for greater value. Hess and Benjamin (2014) suggest that organisations give this passing attention and that process improvement within these elements is almost non-existent compared to that of manufacturing firms. This it states, is the reason why research on the application of LSS into higher education is limited. The service sector is now far more open to scrutiny concerning the provision of these three elements, Anthony and Krishan (2012) stating that the service sector, and particularly that of education, is facing challenges that may affect the ability to maintain these.

Cavaness and Mannochehri (2013) also highlight the fact that the service sector plays a significant part in the global economy and that the past 20 years has seen a development of organisations paying more attention to the efficiencies and effectiveness of their operations in order to improve this further. Numerous researchers conclude that society is now living in an era that is looking for a better quality of life and that this quest relates strongly to services such as healthcare, education, transportation, banking or financial services and public services (Smith and Dahlgard-Park, 2009 cited in Suarez-Barraza et al, 2012). Corbett

(2007) cited in Alsmadi et al, (2012) make reference to the fact that although lean principles and practices have their origins in manufacturing, the belief is still one of the equal importance of the concept to the service organisation as both use systems and processes to improve efficiencies and add greater value to the company and the customer. Corbett (2011) supports this by stating that lean principles and techniques have been adopted in various operations that do not involve a manufacturing element, insurance, government, IT companies, retail and publishing firms being a few examples.

Although a number of service sector organisations have adopted the LSS approach, higher educational institutions appear to have fallen behind. Antony et al (2012) suggest that HEI's have been exploring, and in part, have adopted the lean approach to the sector but have thus far been reluctant to fully engage with the LSS methodology. The author also suggests that HEI's can integrate both methodologies together but this will depend on the nature of the problem or issue. Sexton (2004) however, suggests that incorporating six sigma as a technique into the service organisation is far more time consuming than that of lean. Snee (2010) on the other hand contradicts this by stating that using both methodologies and the tools and techniques that accompany them can ultimately achieve superior results. Antony (2014) identifies a number of HEI's that have already embarked on the lean initiative and have thus far managed to eliminate elements of waste within the business processes. However, although the lean concept has been adopted by numerous HEI's, the integration of both lean and six sigma by these institutions is still limited.

Initiatives such as LSS are often linked or accompanied by critical success factors (CSF's). These will also be linked to readiness factors (RF's) mainly due to the fact that HEI's, although currently engaged, in part, with the concept of LSS, may not yet be adopting fully the initiative but need to be aware of what is required in preparation to fully adapt the practices and principles of LSS. Critical success factors were adopted during the latter part of the 1970's and were essential parts of the implementation for continuous improvement in a manufacturing setting. As the title suggests, these were critical parts of the initiative once the senior management team had decided to invest in the required actions.

However, as Antony (2014) argues, of equal importance are the readiness factors (RF's) that an organisation must show or have available in order to adopt the LSS initiatives. The author makes reference later in the thesis about the lack of process flow and coherence that support Antony's argument, suggesting that readiness for any type of change is a long way from where it would need to be. Radnor (2010) supports this by stating that RF's determine whether or not the organisation is ready to use LSS as a tool to change the culture of the

company. Successful implementation of LSS into HEI's will require that the organisation is ready in terms of available resources (financial, labour, materials etc) but Oakland and Tanner (2007) identify that these initiatives or programmes are not always understood or developed adequately, Balzar (2010 cited in Antony 2014) stating that failure to be 'ready' will ultimately result in resistance towards the implementation of such initiatives. A thematic map could be used and include sub-categories within the main areas of strategic, operational and functional.

1.3 Problem statement

The problem explored in this study looks at the exchange of information between the private education provider and that of their Higher Education counterparts. Numerous collaborative partnerships exist but one of the biggest challenges is that of data exchange, integrity and accuracy. The processes supporting this were felt by the author to lack flow and coherence, resulting in inefficiencies. Students at both the main campus and the partnership campus should receive the same level of experience and their achievements recorded accurately and timely so that continuation, completion and progression are realised. The issue being researched is one that examines current practices within collaborative partnerships, in particular the issues faced when exchanging high volumes of student outcomes over a period of time and involving numerous departments and personnel. This research will be examining such exchanges, methods and systems that operate between the private provider and its mainstream counterparts and in doing so, gain knowledge, understanding and perspectives from both academics and professionals within the sector who experience these practices. With an apparent lack of research around this area, the need for further expansion and adoption of a deeper insight has been addressed in part through this study.

Higher Education is a sector that is highly visible due to the nature of what it does and how it influences links to other industries. As such this has created external pressure for a need to change and examine different or better ways of providing its service to those who chose to enrol. Balzer et al (2015) state that public opinion of the HE sector is one of inefficient and labour intensive with economic challenges throughout. The response to this could be the application of lean principles and practices to the sector, offering the potential of improving both effectiveness and efficiency to those who embrace it fully.

1.4 Research Aim

The focus of this research is to establish if there is basis for the adaptation of a lean approach into Higher Education and in particular, that of collaborative partnerships and the exchange of information. Whilst the aim of this research is not to offer an immediate solution to the issues that HE and its partnerships encounter, what it does aim to do is firstly highlight that there is a need for the adoption of an improvement process and one that should be more widely accepted. The research will also aim to add value to the topic by increasing the body of knowledge available to other academics and researchers within this area and promote thought and actions that may encourage others to explore ideas further. Through a collaborative approach to data collection with stakeholders in the current working partnerships, the author aims to add knowledge to an area of research that is still developing but one that is also gaining interest as this mechanism for HEI synergies continues to grow. Secondly it aims to examine how HE could adapt current principles and practices that are being used successfully within other industries. The application of LSS to HE will need a very considered and tailored approach as success of this in manufacturing is well-established and proven.

1.5 Research objectives

1. To identify any similarities and differences in stakeholder views towards the need for improvement in HE collaborative partnership processes
2. To establish if a consensus would indicate that a lean approach to the process of information exchange could be adopted
3. To examine what benefits might arise through an adoption of lean practices and principles in the HE sector
4. To explore the readiness of change within the HE sector, specifically within collaborative partnerships

1.6 Research questions

As such the research will look to address the following questions:

1. How do stakeholders (experts) perceive the need for improvement in higher education partnership processes, and is there a consensus on these improvements?
2. How can a lean approach enhance information flow in collaborative higher education partnerships, and what are the specific benefits?

3. How prepared is the UK higher education sector to integrate lean principles and practices in its partnership processes?

1.7 Scope of the study

The scope of this research is to examine the feasibility of adopting a system that has shown significant success in the motor manufacturing sector, and adapting its functionality to a service sector provision, in this case Higher Education. This examination plans to investigate research on this basis but not to find or prove conclusive or final solutions to the question. This research is necessary to identify new issues where there is currently an overall lack of information or very little previous research has been done. The aspects of lean six sigma may well impact on any business operation and could be seen as smaller or sub-objectives to the main objectives (Kumar, 2011).

The author is currently employed by a private educational provider that offers the provision of higher education qualifications through being a partner and branch campus for a number of universities. Experience of the varying practices and procedures associated with these institutions has led to the pursuance of better methods. It is also noteworthy to explain at this point that the author also has numerous years of industrial experience working with Lean and Agile in an industrial context. Spanning a 27-year career in a service industry and at one point, specifically adopting a 5-year secondment to a team initiating kaizen within a large distribution centre, the author also has first-hand experience of the philosophies of Kaizen incorporating Lean and continuous improvement. Throughout this period of time several tools and techniques have been used in order to apply the lean philosophy of reduction of waste within processes, these having then been proven successful on many occasions. The author feels that knowledge gained from this will also support the initiation of this research, the collaborative discussions with academics and professionals but also the appreciation of the need and recognition of improvement within a service sector industry. Further research therefore, could help to establish a more accurate but subjective illustration of the viability of such a system being adapted for the service sector.

1.8 Institutional and geographical scope

This research will focus its attention on using 5 mainstream Universities in the UK and how they work collaboratively with one of the biggest private educational providers in the UK. The geographical dispersion of the five universities being used are such that they operate in the

south, specifically the London area the southwest, the Midlands but also in the north of the UK specifically Manchester. The private provider also works collaboratively with Universities in Wales and Newcastle however, the researcher felt that focusing on the five main universities that form part of the private providers portfolio would offer a richer understanding, appreciation and enhancement to the body of knowledge. The chosen institutions for this research also have varying degrees of prestige in terms of ranking but also adopt varying ways in which their overall processes support the functional areas of the Universities and ensure that levels of quality are maintained.

1.9 Research significance

This study aims to enhance the relatively limited body of knowledge around educational institutions and their collaborative educational partnerships, focussing on the potential for adopting a lean approach to the numerous processes that exist. There is literature that exists but in many ways, this is limited to institution-based criteria that recognise its specific operation components and often links to industry rather than other providers of education. Lean thinking is also a key ideology that has developed and grown through industry-based application but over the last 20 years appears to have transitioned, albeit in a limited manner, into the service sector and minimally into Higher Education, thus supporting the statement by Gastelum-Acosta (2023, p2) that 'HEIs require innovative quality systems to improve their fundamental administrative processes and services'.

1.10 Academic significance

Whilst prior research has explored, in part, the relationships between collaborative educational partners, its focus on the improvement of processes within the partnerships is relatively limited. Partnerships will undoubtedly develop strong links between departments and the key players involved with the course delivery, this then encouraging pedagogical focus on content, learning experience and assessments. What this overlooks is the ability to question and improve the mechanisms that are then the drivers for exchanging, validating and authenticating the information that is required to support the student continuation, completion and progression, the essential B3 metrics that the OfS monitor. Universities have their own unique and preferred processes, procedures and systems that are often challenged once an external partner is in play. Collaborative partners will have their own

systems but aligning this with that of the University is almost impossible, creating the need for an adaptive process that may require increased amounts of manual administration, duplication of effort, increased opportunity for human error and several other factors that would essentially be the opposite of a Lean philosophy.

1.11 Practical significance

Given the complexities surrounding the implementation of Lean practices and procedures within collaborative partnerships and the possible uncertainties about the benefits, this thesis aims to provide insights that will hopefully go some way to promote the potential that Lean could offer the educational sector. This study offers valuable exposure to thoughts, ideas and perceptions from academics and professionals within a small selection of HE institutions, and whilst not conclusive or overarching in the outcomes, it does offer the future opportunity to expand this research more widely, possibly even to compare UK universities to those based in other countries. For the Universities themselves, the research provides insights into how they can improve their own internal mechanisms but also how this could transfer through to any or all of their current partners. The research fills a gap, particularly in the UK HE sector, where the topic of Lean with a focus on improving performance outcomes remains relatively unexplored. Currently, existing studies are based on limited practical evidence and theoretical discussions making this thesis practically relevant as it represents a further example of how theories could be offer practical solutions to processes that are relied upon so heavily. The study presents important implications in this area and the practical significance of the study extends to offering the educational sector, those operating in resource-constrained environments, insights into options for transforming traditional and historic processes into modern, sustainable ones. In conclusion, this research is of considerable practical relevance as it offers actionable insights for advancing Lean practices and procedures into the Higher Education sector.

1.12 Research methodology

This study adopts an interpretivist and pragmatic philosophy, focusing on subjective experiences and multiple stakeholder viewpoints, rather than the critical realist approach, which tends to emphasise an objective reality with an interplay of structural and agentic factors. Interpretivism is appropriate for understanding stakeholder experiences and opinions from a practical perspective whilst also examining the feasibility and benefits of adopting lean principles in HE partnerships (Saunders et al., 2018; Tamminen & Poucher, 2020),

whilst a pragmatic approach would also support a practical and considered way to develop or adopt change. Due to a limited amount of knowledge available around this topic, a grounded theory was chosen so that the qualitative data could help develop a better understanding from a base level, whilst offering the potential for a conceptual framework.

An inductive approach was chosen for this research because the need for stakeholder perspectives is crucial in developing an insight into thoughts, ideas and opinions around the potential for adoption of lean into UK Higher Education collaborative partnerships. To support this approach a multi-method qualitative triangulation methodology was chosen using purposive and snowball sampling. This started with an informal focus group of 6 participants followed by 10 responses from an online questionnaire and concluded with 12 semi-structured interviews, all with academics or professionals. When different qualitative methods are combined to explore the same research problem, insurances can be given that the insights are well-rounded and not reliant on a single data source or method. Also, since a purposive snowball sampling technique was adopted and different participants and variables used for each method, the research remained one of a cross-sectional approach, examining stakeholder perspectives at specific points in time without the intention of measuring change over a period of time. These methodological steps were taken to achieve each research objective, ensuring alignment with the research questions and overall research aim. By employing these methodological steps, this research aimed to gather detailed insights into stakeholder views, potential benefits, and readiness for adopting lean principles in HE collaborative partnerships, contributing to the overall research aim and existing literature.

1.13 Structure of the Thesis

In order to address the aim and objectives of this research and to then answer the research questions, this thesis has been structured in such a way that will embrace the complexity of the topic area. Having already set out the introduction whereby an overview of the topic has been offered followed by the background to support this, the problem statement has been explained in the context of applying lean to HE and in particular, the exchange of information between collaborative partnerships. The aim of this research has then been clarified along with supporting objectives and the necessary research questions and finally the scope of the study thus completing the overarching process.

Chapter Two examines the literature to support the topic being researched and also covers the theoretical background to lean. The chapter explores the history and rationale for collaborative partnerships, the difference between the two terms used and then looks at lean

as a philosophy within the context of both manufacturing and the service industry. The application of lean is then examined within the literature available to ascertain its appeal and appropriateness as a tool within the Higher Education sector. The chapter concludes with a conceptual model, taking into consideration the objectives and research questions that in turn led to the findings of the data collection and its thematic outcomes.

Chapter Three looks at the methodology for this thesis and uses Saunders Research Onion to identify the options by which this research can be conducted and then justifies those chosen. This chapter then goes on to explain the choice of primary data collection and the process involved as well as the instruments used to collect it. The process for conducting the semi-structured interviews is also explained along with details about the participants.

Chapter Four (Analysis and results) highlights the analysis of the data collection using Nvivo and the thematic approach used to extract specifics from the transcripts in order to help support the overall aim and objectives whilst looking to answer the research questions. The results are shown in a thematic format and are structured in such a way that aligns with the sequence of the interview questions whilst also linking back to the literature.

Chapter Five (Discussion of the Findings) discusses what has been found and determined through the analysis of the data and how this then supports the aim of this research by offering answers to the research questions. The discussion also identifies how this research and its outcome adds knowledge to this topic.

Chapter Six (Interim implementation and evaluation of recommendations in a selected case study) explores a case study for one of the University partners who decided strategically to reduce its number of collaborative partners. As part of this strategy, it adopted a Lean and Agile approach towards the teach-out of the partnership.

Chapter Seven (Conclusion) draws on previous chapters to summarise the content and then revisit the overall aim, research objectives and research questions to then show answers as appropriate thus concluding the analysis and findings.

1.14 Chapter summary

This chapter has provided a comprehensive overview of the research context, detailing the study's background, scope, primary research questions, key objectives, and the research plan designed to meet these goals effectively. The formulation of the research objectives

and questions has been discussed, along with an explanation of the academic and practical significance of the study. The author has also justified the relevance of the chosen research topic for empirical investigation at the Doctoral level, outlining its theoretical and practical contributions to existing knowledge. Additionally, the philosophical and methodological approaches adopted in the thesis have been briefly introduced and rationalized. Finally, this chapter has outlined the overall thesis structure, summarizing the key points covered in each chapter.

Chapter Two: Literature review

2.1 Introduction

This chapter provides a comprehensive summary of research on the need for change in the collaborative higher education context and the adoption of Lean. A thorough literature review was conducted to explore and clarify the issues surrounding the growing trend around collaborative partnerships within the sector and the benefits from adopting a lean philosophy. The review identified several areas for scrutiny but also factors that would need to be addressed should adoption and implementation happen. The need for effective communication, clear roles and responsibilities, and the ability to measure and track progress of any changes have also been highlighted as success factors. It also underscored the need to address potential challenges, including limited resources and insufficient knowledge of lean tools and techniques.

2.2 History of collaborations

Collaboration has been an essential mechanism for human progress, spanning various sectors and disciplines over centuries, Mattessich and Johnson (2018, p10) stating that 'collaboration results in easier, faster and more coherent access to services and benefits and in greater effects on systems'. Collaboration should not be seen as a substitute for adequate

funding but more a synergistic effort for the collaborative partners to be creative in ways that will help overcome obstacles, one such example being that of expansion into other geographical areas. Gray (1989) supports this by stating that collaboration as a process where various organisations combine resources, skills and expertise to achieve shared goals. Historically collaboration emerged from the need for organisations to solve complex problems that exceeded the capabilities of any one entity.

Early collaborations highlight examples of industrial partnerships being formed such as joint ventures in manufacturing or academic-industry partnerships (Powell, 2003). Technological advancements such as the internet have reshaped collaborative opportunities (Gulati et al, 2012) with the addition of digital communication tools that have enabled quicker and more efficient collaboration across previous geographical barriers. There has also been much development and progress with Public-Private Partnerships (PPP) allowing infrastructure and governance to be developed thus shaping sectors such as Healthcare and Education (Klijn and Teisman, 2003).

The Industrial Revolution also transformed the nature of collaboration, particularly in the business and industrial sectors (Miller, 2009). The growth of large-scale factories and mechanised production triggered the need for collaborative efforts to innovate, reduce costs, and enter new markets. One of the earliest examples of industrial collaboration was the partnership between James Watt and Matthew Boulton. In the 1770s, Watt's invention of the improved steam engine revolutionised industrial production, but it was Boulton's financial backing and business acumen that turned Watt's invention into a commercial success (Procter, 2004). Their collaboration exemplified the symbiotic relationship between technological innovation and entrepreneurial support (Mullen, 2021). Similarly, the development of the railroad industry in the 19th century required extensive collaboration between engineers, investors, and governments. Projects like the construction of the First Transcontinental Railroad in the United States involved coordinated efforts between private railroad companies and the federal government, which provided land grants and financial incentives (White, 2011; Roll, 1930).

The landscape for post-compulsory education has seen a significant change over the last decade. The introduction of innovative ideas, new technology, blended learning, and the way in which collaborations have been formed have all contributed to the emergence of a new learning environment. Shuck (2016) suggests that technology is expected to increase this collaborative approach between HE institutions and colleges or private providers, utilising the knowledge and resources available to enhance the learning experience. Zhang et al,

(2021) view this slightly differently by stating that technological alliance takes purposive actions to gain access to technological knowledge and to develop innovative capabilities, alliance partners engaging in collaborative activities to ultimately accomplish innovative outcomes. Change would appear to be the operative word within the current context of higher education, the shift in roles, reinvention of classrooms and materials being easier to access through the adoption of emerging and innovative technologies (Isaias, 2018). The need for learning to be more flexible and accessible has led to HE providers exploring and developing ideas that extend and expand the traditional idea of attending classes at set times and places with routines that control and limit any such flexibility. The consumer of further or higher education is no longer a typical school leaver or someone who has completed their 6th form education, their profile is now as varied and complex as it could possibly be, requiring organisations and institutions to think outside the box and develop creative, appealing and accessible programmes of study.

This necessity to develop an appealing but effective educational offering to the wider demographic of learners has led to more collaboration and partnerships, fostering notions of the knowledge economy and favouring a university education pivotal to potential economic outputs (Ball, 2012 cited in Larkin, 2013). As the expectations of higher education increase and the resources to meet this are limited, consideration for collaboration grows and the power and benefits of inter-organisational working becomes more attractive (Wilson, 2016). Pařová et al (2018) describe collaboration as a 'win-win' for all parties and one that enriches the education process. Pařová also alludes to the knowledge economy, similarly to that of Ball (2012), in particular suggesting that economic and social advancement are built on three elements; research, innovation and higher education systems. The European Commission (2015) support this by stating that education, innovation and universities are part of a mechanism that has the ability to create wealth, jobs and social progress.

The literature would appear to identify and support innovative and collaborative approaches to post-compulsory education and as such organisations continue to embrace this ideal in many ways. King et al (2014) examines the experience of students who undertake HE qualifications through a collaborative partnership with FE colleges and how this has stirred interest both institutionally and nationally. King also expresses that, whilst the current issue of collaboration is the student journey and experience, previously the concern for these partnerships has been the culture created and how this compares with the traditional university campus.

Educational providers are becoming more aware of the benefits of utilising resources that may be more readily available through partnerships or indeed shared with them. Bischoff et al (2017) identify the concept of stakeholder theory whereby entrepreneurial education within higher education institutions examines and encompasses the pedagogy or process of entrepreneurial attitudes and skills for new ventures including collaboration. Pherali and Lewis (2019) state that recognition and reputation of universities is often measured and interpreted by the quality of teaching, research and more importantly innovation. Ezeokoli and Ayodele (2014) allude to the institutional quality assurance mechanisms and how these are maintained and enforced, whilst considering the strategic approach to social and technological advancement but also being conscious of economic growth. Again the literature highlights the themes of innovation and economic growth through collaboration of institutions but also refers to the advantages of shared resources or the development of these through partnerships.

2.3 The difference between collaboration and partnerships

Collaboration and partnership are terms often used interchangeably in professional, industrial and academic contexts thus understanding the definition of each would be a worthwhile clarification. The Cambridge Business English Dictionary (2024) defines collaboration as ‘the act of working together with other people or organisations to create or achieve something’ whilst partnership is explained as ‘an agreement between organisations, people, etc. to work together’. Whilst each term may share common ground, in the cooperation they represent very different forms of working relationships. Collaboration refers to the process where individuals, teams, or organisations work together toward a common goal by sharing ideas, resources, and tasks (Carnwell and Carson, 2005). In contrast a partnership tends to be a more formalised and long-term arrangement between the parties with a shared interest, often with legal, financial, or contractual obligations (Gallant et al, 2002). Understanding the difference between these two concepts is crucial because the nature of the relationship defines the approach, expectations, and outcomes of the engagement.

2.3.1 Collaboration: A Process-Oriented Approach

Collaboration is a process-oriented concept in which individuals or organizations work together to achieve a shared objective. It often involves sharing knowledge, resources, and ideas but does not necessarily require a formal, long-term commitment. The focus is

primarily on achieving the task at hand, with flexibility in the level of engagement and involvement of the participants. According to Austin (2000), collaboration is often seen as a fluid and dynamic process that can vary in intensity and scope. It involves open communication and the joint effort of multiple parties, typically in an informal or semi-formal context. The flexibility of collaboration makes it suitable for short-term projects or specific goals that require diverse perspectives and skills but do not necessitate a long-term commitment. One defining characteristic of collaboration is that the roles and responsibilities of the participants may be fluid, evolving based on the needs of the project. For example, in a collaborative research project, different researchers may take the lead at different stages, depending on their expertise and the demands of the project (Mattessich & Monsey, 1992).

2.3.2 Partnership: A Formalised Relationship

In contrast to collaboration, partnership is typically a more formal and structured relationship between two or more parties who have agreed to work together toward a common goal over a longer period. Partnerships often involve legal agreements, shared financial interests, and formalized roles and responsibilities. As Himmelman (2001) notes, partnerships are characterized by mutual benefits and a more substantial commitment compared to collaborations. Partnerships are often legally binding, and they may involve significant resource allocation, including financial investments, shared intellectual property, and joint management of projects. This formalization ensures that each party has a clear understanding of their responsibilities and expectations. For instance, in a business partnership, the parties may share profits and losses, as well as decision-making authority, depending on the terms of the partnership agreement (Huxham & Vangen, 2005). While partnerships also involve collaboration, the distinction lies in the level of formality, the commitment to shared goals, and the structured nature of the relationship. Partnerships often require a more strategic alignment of interests and long-term planning, with a focus on mutual benefit rather than just achieving a specific task.

2.3.3 Collaboration and Partnership in Academic Literature

The academic literature offers various frameworks for understanding collaboration and partnership, each emphasizing different aspects of these relationships. Scholars have sought to define the conceptual boundaries between collaboration and partnership by analyzing their distinct characteristics, motivations, and outcomes. Austin (2000) introduces the concept of a collaboration continuum, where the level of engagement between parties can vary from simple cooperation to full collaboration. Cooperation involves low levels of

interaction and resource sharing, while collaboration involves deeper integration and interdependence. At the extreme end of the continuum, collaboration can become as structured and formalized as a partnership.

In their work on inter-organisational relationships, Mattessich and Monsey (1992) describe collaboration as a process of working together where the parties maintain their independence but pool their expertise and resources to achieve a common goal. This collaborative relationship is less formal than a partnership and typically revolves around solving a particular problem or completing a project. Similarly, Gray (1989) views collaboration as a process of joint problem-solving, where different stakeholders come together to address a shared issue. The collaborative process is characterized by open dialogue, negotiation, and flexibility in decision-making, without the rigid structures found in partnerships.

2.3.4 Partnerships as Strategic Alliances

Partnerships can often be framed within the context of strategic alliances. According to Huxham and Vangen (2005), partnerships are built on a foundation of mutual benefit, where the parties involved have a vested interest in each other's success. This long-term relationship often involves the sharing of resources, risks, and rewards, with clearly defined roles and responsibilities for each partner. In contrast to collaboration, partnerships are often established to achieve strategic objectives that go beyond short-term goals. For example, in the business world, partnerships may be formed to enter new markets, share technology, or co-develop products (Das & Teng, 2000). These partnerships are formalized through contracts, joint ventures, or equity sharing arrangements, reflecting the deeper level of commitment compared to collaboration. Himmelman (2001) suggests that partnerships are often motivated by the need to leverage each other's strengths, mitigate risks, and achieve goals that would be difficult to accomplish independently. Partnerships are characterized by a higher degree of trust and interdependence, as the parties rely on each other for the long-term success of their shared objectives.

2.3.5 Characteristics and Key Differences Between Collaboration and Partnership

While collaboration and partnership share similarities in that they both involve working together toward a shared goal, they differ in several fundamental ways. These differences can be observed across various dimensions, including formality, duration, resource commitment, and outcomes. The most significant difference between collaboration and

partnership is the level of formality and structure. Collaboration is generally less formal and more flexible, with participants working together as needed, often without formal contracts or legal obligations. This lack of formal structure allows for adaptability and the ability to change roles and responsibilities as the project evolves (Austin, 2000). In contrast, partnerships are formalized through legal agreements, contracts, or memoranda of understanding (MoUs), which outline the specific terms of the relationship. Partnerships involve a higher degree of formality, with clearly defined roles, shared resources, and long-term commitments. This formalization ensures that both parties are aligned in their objectives and responsibilities, reducing the risk of misunderstandings or conflicts (Huxham & Vangen, 2005).

Another key difference lies in the duration and level of commitment required from the parties involved. Collaborations are often project-based or short-term, with participants coming together to achieve a specific goal and disbanding once the project is complete. The focus is on the task at hand, and the relationship may not extend beyond the scope of the project (Mattessich & Monsey, 1992). Partnerships, on the other hand, are typically long-term relationships that extend beyond the completion of individual projects. Partners may engage in multiple initiatives together, with a focus on building sustainable, mutually beneficial relationships over time. This long-term commitment requires a higher level of trust, as partners often rely on each other for continued success (Himmelman, 2001).

2.3.6 Resource Sharing and Risk Management

Collaboration generally involves a lower level of resource sharing compared to partnerships. In a collaborative relationship, participants may share information, expertise, and ideas, but they typically maintain their own resources and assets. There is less interdependence in terms of finances, technology, or infrastructure, making collaboration a lower-risk engagement (Gray, 1989). In partnerships resource sharing is more extensive and integral to the success of the relationship. Partners often pool their financial resources, share intellectual property, and jointly manage projects. This interdependence increases the potential risks and rewards for both parties, as the success of the partnership is often tied to the collective efforts and resources of all involved (Das & Teng, 2000). The outcomes of collaboration and partnership also differ in terms of accountability and shared success. In a collaborative relationship, the success of the project is often measured by the achievement of the specific task or goal, and participants may not be held accountable for the overall success of the relationship. The focus is on the immediate project, and once it is completed, the collaboration may dissolve (Austin, 2000). In partnerships, the success of the relationship is often measured by the long-term outcomes and the overall sustainability of the partnership. Partners are accountable to each other for the success of the initiatives they

undertake together, and failure to deliver on commitments can have significant consequences for the partnership as a whole (Huxham & Vangen, 2005).

This accountability is formalized through contracts and agreements, which outline the specific roles and responsibilities of each partner.

Collaboration is referred to by Rodrigues (2007) as identifying ways that bring together creativity and innovation to stimulate combined thinking towards future and ongoing initiatives. The amalgamation of resources and competencies created through collaborated practices affect the functionality of each company and eventually the financial performance (Seshadri, 2013). The Resource Based View (RBV) suggests that a company's competencies also include the organisational processes which enhance both the effectiveness and efficiencies (Barney, 1991) whilst more recent ideals have identified a broader appeal to that of organisational functionality.

Educational providers are becoming more aware of the benefits of utilising resources that may be more readily available through partnerships or indeed shared with them. Bischoff et al (2017) identify the concept of stakeholder theory whereby entrepreneurial education within higher education institutions examines and encompasses the pedagogy or process of entrepreneurial attitudes and skills for new ventures including collaboration. Pherali and Lewis (2019) state that recognition and reputation of universities is often measured and interpreted by the quality of teaching, research and more importantly innovation. Ezeokoli and Ayodele (2014) allude to the institutional quality assurance mechanisms and how these are maintained and enforced, whilst considering the strategic approach to social and technological advancement but also being conscious of economic growth. Again the literature highlights the themes of innovation and economic growth through collaboration of institutions but also refers to the advantages of shared resources or the development of these through partnerships.

2.4 Collaboration and Partnership in Different Sectors

The distinction between collaboration and partnership can be seen in various sectors, including education, business, research, and non-profit organisations. These real-world examples highlight the different ways in which collaboration and partnership are utilised, depending on the goals, duration, and resources involved. In academic research, collaboration is common, particularly in interdisciplinary studies. Researchers from different fields may come together to work on a specific project, such as a scientific experiment or a grant-funded study. These collaborations are often short-term and focused on achieving a

specific research objective. For example, researchers working on a multi-disciplinary study on climate change may collaborate for the duration of the project, sharing data, methods, and findings (Gray, 1989). While the collaboration may lead to co-authored papers or joint presentations, the researchers maintain their individual affiliations and responsibilities. Once the project is completed, the collaboration may dissolve, with each researcher returning to their own work.

In contrast, partnerships in the business world are often formalized through joint ventures or strategic alliances. A well-known example is the partnership between **Apple** and **Foxconn**, where Foxconn manufactures a significant portion of Apple's products. This long-term partnership is formalized through contracts and involves extensive resource sharing, with Foxconn providing the manufacturing expertise and Apple supplying the product designs and intellectual property (Lazonick, 2010). This partnership is characterized by mutual dependence, as both Apple and Foxconn rely on each other for the success of their respective businesses. The formalization of this partnership ensures that both companies are accountable for meeting production targets, quality standards, and delivery timelines.

In the education sector, collaborations are often seen between schools, universities, and external organizations, such as government agencies or non-profits. For example, a university may collaborate with a local school district to offer teacher training programs. This collaboration is typically short-term and focused on a specific initiative, such as improving teaching methods in science or technology (Austin, 2000). Educational partnerships tend to be more formal and long-term. For example, a university may enter into a partnership with a corporate sponsor to fund scholarships for students in underserved communities. This partnership involves a long-term commitment, shared resources, and mutual benefits for both the university and the corporate sponsor. While collaboration and partnership both involve working together toward a common goal, they represent distinct forms of relationships. Collaboration is generally less formal, more flexible, and short-term, with participants focusing on achieving a specific task. In contrast, partnerships are more formalized, long-term relationships characterized by shared resources, mutual dependence, and accountability. Understanding the differences between these two concepts is essential for effectively managing relationships in various sectors. Whether in research, business, or education, the choice between collaboration and partnership depends on the goals, resources, and level of commitment required. Both collaboration and partnership have their advantages, and choosing the right approach can significantly impact the success of the initiative.

2.4.1 Industry based collaborative partnerships

In today's globalised and fast-paced economic landscape, industry-based collaborative partnerships have become increasingly vital for companies seeking to innovate, expand their reach, and remain competitive (Dyer & Singh, 1998). These partnerships are formal agreements between businesses and sometimes other entities like research institutions, government agencies, or non-governmental organizations (NGOs). They facilitate resource-sharing, knowledge exchange, and joint ventures aimed at achieving mutual objectives. In many industries, collaborative partnerships provide access to new markets, technology, expertise, and economies of scale that would be difficult or expensive to obtain individually. Examples of these partnerships include mergers, acquisitions, joint ventures, and strategic alliances, with specific examples from technology, automotive, and pharmaceutical industries (Doz & Hamel, 1998).

2.4.2 Defining Industry-Based Collaborative Partnerships

Industry-based collaborative partnerships are formal relationships between two or more businesses or organizations that come together to achieve shared objectives. Unlike informal collaborations, these partnerships are typically codified in agreements that outline the roles, responsibilities, and contributions of each party involved. The nature of these partnerships can range from short-term projects, like the development of a new product, to long-term strategic alliances where both parties pool resources to pursue joint ventures or innovation (Chesbrough, 2006). Partnerships often involve companies from similar or complementary industries, allowing them to combine their strengths for mutual benefit (Gulati, 1998). For example, a technology company may partner with a manufacturing firm to develop new hardware products, while a pharmaceutical company might collaborate with a biotechnology firm to research and develop new drugs. These partnerships often rely on shared knowledge, technological exchange, and co-investment in resources.

2.4.3 Types of Industry-Based Collaborative Partnerships

A strategic alliance is a partnership between two or more companies that seek to achieve long-term objectives while maintaining their independence. This type of partnership can involve sharing technology, resources, or access to markets without requiring a formal

merger or acquisition (Doz & Hamel, 1998). An example of a strategic alliance is the partnership between Renault-Nissan-Mitsubishi that combines research and development efforts across multiple regions to lower production costs and increase market share in the automotive industry (Lasserre, 2017).

A joint venture is a more formalised and structured partnership where two or more companies create a separate legal entity to pursue a specific business opportunity. This entity is jointly owned and operated by the partnering companies, which share the profits, losses, and management responsibilities. Joint ventures are commonly used for projects that require substantial capital investment or technical expertise, such as infrastructure projects or large-scale manufacturing (Geringer & Hebert, 1989). For example, Sony Ericsson was a joint venture formed in 2001 between Sony and Ericsson to develop and market mobile phones. Consortia: A consortium is a partnership involving multiple organizations, often from different sectors or industries, that collaborate to achieve a specific goal. Consortia are frequently used in large-scale research and development (R&D) projects, particularly those funded by governments or international organizations. For example, the European Space Agency (ESA) has formed consortia of aerospace companies and research institutions to develop and launch space missions (Teague, 2007).

Supply Chain Partnerships occur between companies and their suppliers or distributors to optimize the flow of goods and services. They often focus on improving efficiency, reducing costs, and increasing transparency throughout the supply chain. For instance, Walmart has longstanding collaborative partnerships with its suppliers to implement just-in-time (JIT) inventory systems, which have improved supply chain efficiency and reduced stockouts (Kumar & Kumar, 2020). Collaborative partnerships in industry offer a range of benefits to the companies involved, helping them navigate the complexities of global markets, technological advancements, and shifting consumer demands. Below are some key advantages of these partnerships.

2.4.4 Innovation and Research & Development

One of the most significant advantages of industry-based collaborative partnerships is the potential for innovation. Collaborations between companies in R&D-heavy sectors, such as technology, pharmaceuticals, and automotive, often lead to breakthroughs that would be

difficult to achieve independently. By pooling expertise, research capabilities, and resources, partners can accelerate the development of new products, services, and technologies. For instance, GlaxoSmithKline (GSK) and Vir Biotechnology formed a partnership to develop treatments for influenza and other respiratory diseases. This collaboration leverages Vir's expertise in infectious disease therapies and GSK's experience in drug development to accelerate the creation of innovative treatments (Vir Biotechnology, 2020).

Collaborative partnerships provide companies with opportunities to expand into new markets or reach new customer segments. By partnering with a company that has an established presence in a specific region or industry, businesses can overcome barriers to entry, such as regulatory challenges or lack of local knowledge. For example, Starbucks partnered with Tata Global Beverages to enter the Indian market, combining Tata's local expertise with Starbucks' global brand recognition. This partnership allowed Starbucks to quickly establish a foothold in one of the world's largest and fastest-growing markets (Sengupta, 2016). Collaborative partnerships allow companies to share the financial, operational, and strategic risks associated with large-scale projects or new ventures. In industries with high levels of uncertainty, such as energy or technology, spreading risk across multiple partners can make ventures more viable. For instance, large oil companies like ExxonMobil, BP, and Shell often form joint ventures for exploring and developing oil fields. These partnerships allow them to share the significant costs and risks associated with drilling in unexplored regions (Grant, 2016). Industry-based collaborative partnerships often lead to cost reductions and improved operational efficiency by allowing companies to leverage each other's strengths. By pooling resources, companies can reduce production costs, increase economies of scale, and streamline supply chains. For example, Toyota and BMW partnered to co-develop fuel-efficient engines and hydrogen fuel cell technology. This partnership helped both companies reduce R&D costs while speeding up the development process (Heller, 2013).

2.4.5 Enhanced Competitiveness

Collaborating with other companies can increase competitiveness by allowing businesses to offer a broader range of products and services, enter new markets, or adopt cutting-edge technologies. For instance, the partnership between Cisco Systems and Microsoft focuses on integrating Cisco's networking hardware with Microsoft's cloud-based services, making both companies more competitive in the rapidly evolving IT and telecommunications sectors (Liebowitz, 2012). Despite the numerous benefits, industry-based collaborative partnerships

are not without challenges. These include cultural differences, misaligned objectives, and issues related to trust and transparency. One of the most significant challenges in industry-based collaborative partnerships is managing cultural and organizational differences between the partnering companies. Differences in corporate culture, management style, and decision-making processes can lead to misunderstandings, conflicts, and delays in project implementation. This issue is particularly common in cross-border partnerships, where language barriers and cultural norms can complicate communication and collaboration (Parkhe, 1991). For instance, when Daimler-Benz and Chrysler merged to form DaimlerChrysler in 1998, significant cultural differences between the German and American sides of the business led to friction, miscommunication, and eventually, the dissolution of the partnership in 2007 (Badrtalei & Bates, 2007).

2.4.6 Misaligned Objectives

Partners in collaborative agreements must have clearly aligned objectives to ensure the success of the partnership. When partners have conflicting goals, it can create tension and hinder collaboration. For example, in a joint venture, one partner might prioritize short-term profitability, while the other focuses on long-term strategic growth. This misalignment can lead to disagreements over resource allocation, project timelines, and performance evaluation (Doz & Hamel, 1998). In 2017, the partnership between Apple and Imagination Technologies dissolved when Apple shifted its focus toward developing in-house graphics processing units (GPUs), rendering the partnership obsolete and highlighting the risks of misaligned objectives in long-term collaborations (Chapple, 2017). Trust is a critical component of any collaborative partnership, particularly when sensitive information, intellectual property, or proprietary technology is involved. A lack of trust or transparency can result in partners withholding crucial information, undermining the success of the collaboration. To mitigate this, companies must establish clear communication channels, confidentiality agreements, and conflict-resolution mechanisms to foster trust and openness (Gulati, 1995). For example, the partnership between Tesla and Panasonic to develop batteries for electric vehicles faced challenges related to transparency and trust. Panasonic raised concerns over Tesla's decision to source batteries from other suppliers, which led to tensions between the two companies (Matsuda & Byford, 2021).

2.4.7 Intellectual Property and Ownership Issues

In many industry-based collaborative partnerships, the question of who owns the intellectual property (IP) resulting from the collaboration can be a source of contention. Partners must negotiate clear terms regarding the ownership, usage rights, and commercialization of jointly developed technologies or products. Failure to do so can lead to disputes that jeopardize the partnership's long-term viability (Contractor & Lorange, 2002). For instance, the collaboration between Qualcomm and Broadcom over wireless technology faced legal disputes regarding IP ownership and patent infringement, which eventually led to litigation and strained their business relationship (Shih, 2004).

In the aerospace industry, collaboration is essential due to the complexity and scale of aircraft manufacturing. Boeing's partnership with Tata Advanced Systems (TASL) is a prominent example of a successful industry-based collaborative partnership. Boeing and TASL collaborate on manufacturing aerostructures for military aircraft, such as the Apache helicopter, in India. This partnership not only strengthens Boeing's global supply chain but also aligns with India's "Make in India" initiative, which aims to boost local manufacturing capabilities (Boeing, 2020). This collaboration benefits both companies: Boeing gains access to a cost-effective manufacturing base, while Tata strengthens its position in the global aerospace supply chain and gains valuable technological expertise. Additionally, the partnership has helped Boeing comply with local content requirements, enabling it to compete for defense contracts in India.

The partnership between Toyota and Tesla Motors, formed in 2010, was aimed at developing electric vehicles (EVs) using Tesla's battery technology and Toyota's manufacturing expertise. This collaboration allowed both companies to leverage each other's strengths—Tesla gained access to Toyota's mass-production capabilities, while Toyota could tap into Tesla's cutting-edge EV technology (Mangram, 2012). While the partnership was initially successful, it eventually dissolved in 2017 due to differences in long-term strategic goals. Toyota began focusing on developing its own electric vehicle technology, while Tesla pursued its vision of becoming an independent automaker. Nevertheless, the collaboration between the two companies significantly advanced the development of electric vehicles and demonstrated the potential benefits of industry-based partnerships in driving innovation.

In 2014, IBM and Apple formed a partnership to develop enterprise-level mobile applications for iOS devices. This partnership combined Apple's hardware and user-friendly design with IBM's expertise in enterprise software and data analytics. Together, they developed more than 100 industry-specific applications for sectors such as healthcare, retail, and finance

(Yoffie & Cusumano, 2015). This partnership allowed both companies to enter new markets: Apple expanded its presence in the enterprise sector, traditionally dominated by IBM, while IBM leveraged Apple's devices to offer its customers cutting-edge mobile solutions. The collaboration between IBM and Apple exemplifies how industry-based partnerships can create synergies between technology companies and lead to mutual benefits.

Industry-based collaborative partnerships are a powerful tool for companies seeking to innovate, reduce costs, enter new markets, and share risks. These partnerships can take various forms, from strategic alliances and joint ventures to supply chain partnerships and consortia. While these collaborations offer significant benefits, including access to new markets, innovation, and cost savings, they also present challenges related to cultural differences, misaligned objectives, trust, and intellectual property disputes. The success of industry-based collaborative partnerships often depends on clear communication, aligned goals, and mutual trust. Real-world examples, such as Boeing's partnership with Tata Advanced Systems and the collaboration between Toyota and Tesla, illustrate the transformative potential of these partnerships across industries. As companies continue to navigate the complexities of a globalized economy, industry-based collaborative partnerships will remain a crucial strategy for achieving sustainable growth and innovation.

2.5 Educational-based collaborative partnerships

Educational-based collaborative partnerships have emerged as a vital mechanism for fostering innovation, resource sharing, and systemic improvement across various levels of education. These partnerships involve collaborations between educational institutions, businesses, non-governmental organizations (NGOs), governments, and communities to work towards shared goals in education. They play a key role in addressing complex challenges such as resource scarcity, access to quality education, equity in education, and preparing students for the evolving job market. By pooling expertise, knowledge, and resources, these partnerships aim to create new opportunities for students, enhance educational outcomes, and address the broader social, economic, and technological needs of society.

2.5.1 Defining Educational-Based Collaborative Partnerships

Educational-based collaborative partnerships are formal or informal alliances between schools, universities, businesses, government bodies, and other stakeholders, aimed at achieving shared educational goals. These partnerships may focus on areas such as curriculum development, professional development for educators, research, community engagement, or addressing specific educational challenges such as dropout rates or the digital divide (Hill, 2009).

Unlike traditional educational models, which often operate in silos, collaborative partnerships emphasize inter-organizational cooperation and shared responsibility. The partners typically bring different expertise and resources to the table, allowing for more comprehensive approaches to problem-solving and innovation (Levin & Riffel, 1997). For instance, a school district might partner with a technology company to develop a new curriculum for digital literacy, or a university may collaborate with a local government to provide adult education and workforce training.

2.5.2 Types of Educational-Based Collaborative Partnerships

1. **School-Business Partnerships:** These partnerships involve collaborations between schools and businesses, often aimed at providing students with real-world experiences, internships, job placements, and career development opportunities. Such partnerships also help align education with the needs of the labor market, ensuring that students acquire skills that are relevant and in demand (Sanders, 2006). For example, IBM's Pathways in Technology Early College High School (P-TECH) is a collaboration between schools, community colleges, and businesses that prepares students for STEM careers by offering hands-on experience, internships, and mentorship (IBM, 2020).
2. **University-Industry Partnerships:** Universities often collaborate with industries for research and development, internships, and workforce training. These partnerships can lead to advancements in research, commercialization of new technologies, and the development of new curricula that reflect the latest industry trends. For instance, MIT's collaboration with Boeing focuses on aeronautical engineering research and innovation, benefiting both the university in terms of research opportunities and Boeing in terms of technological advancements (Etzkowitz & Leydesdorff, 2000).
3. **Public-Private Partnerships (PPP):** In the educational context, PPPs are collaborations between government bodies and private entities, aimed at improving the quality of education, infrastructure, and accessibility. These partnerships are

especially common in regions where government resources are limited. PPPs often involve the private sector providing funding or expertise for public educational projects in exchange for certain concessions (Hodge & Greve, 2007). For example, in India, the Sarva Shiksha Abhiyan (SSA) program involves partnerships between the government and private organizations to ensure universal primary education.

4. **Community-School Partnerships:** These partnerships focus on engaging local communities in the educational process. Community organizations, parents, and schools work together to create supportive environments for students, especially in underserved areas. Community-school partnerships can address various issues, such as improving school attendance, providing extracurricular activities, and enhancing student engagement (Epstein, 2010). The Coalition for Community Schools in the United States is an example of such a partnership, where schools collaborate with local organizations to provide health services, after-school programs, and family support services.
5. **Inter-School Collaborations:** These are partnerships between different schools, often within the same district, aimed at sharing resources, best practices, and knowledge. Schools may collaborate on joint projects, teacher training, or curriculum development to improve educational outcomes across the board. For example, the London Challenge was an initiative that involved partnerships between schools in London to improve academic standards through collaboration, mentoring, and knowledge sharing (Kerr et al., 2014).

2.5.3 Benefits of Educational-Based Collaborative Partnerships

Educational-based collaborative partnerships offer numerous benefits, including resource sharing, innovation, enhanced educational outcomes, and community engagement. The following sections discuss some of the key advantages of these partnerships.

1. Collaborative partnerships often serve as incubators for innovation in education. By bringing together diverse perspectives and expertise, these partnerships can develop new curricula, teaching methods, and educational technologies. For instance, partnerships between universities and industries can lead to the development of programs that equip students with skills in emerging fields such as artificial intelligence, renewable energy, and biotechnology (McMahon & Marsh, 2006). Such partnerships help ensure that educational institutions remain responsive to the changing needs of the job market and technological advancements. Stanford University's partnership with Google has led to innovations in computer science education, particularly in areas such as machine learning and data science. This

collaboration has resulted in the creation of new courses and research opportunities that prepare students for careers in tech (NRC, 2012).

2. Collaborative partnerships often provide professional development opportunities for teachers and educators. For example, partnerships between schools and universities or businesses can offer teachers access to training in new teaching methods, technologies, or subject areas. This continuous professional development helps educators stay current with the latest educational trends and ensures that they are equipped to provide high-quality education to their students (Darling-Hammond et al., 2017). In New Zealand, the Learning and Change Networks (LCN) program involves schools collaborating with educational researchers to implement evidence-based teaching practices. This partnership has resulted in improved teaching quality and student outcomes across the participating schools (Timperley, 2015).
3. Educational-based collaborative partnerships allow institutions to pool their resources, which can lead to cost savings and improved efficiency. This is particularly important in times of budget constraints, where schools and universities may struggle to provide high-quality education with limited resources. Partnerships with businesses or other educational institutions can help reduce costs by sharing infrastructure, technology, and personnel (Barringer & Harrison, 2000). The California Community College Online Education Initiative involves multiple community colleges sharing an online platform, course materials, and faculty resources to provide high-quality online education to students across the state. This partnership has not only reduced costs but has also expanded access to education for students in rural or underserved areas (OEI, 2019).
4. One of the key benefits of educational-based collaborative partnerships, particularly those involving industries, is their ability to bridge the gap between education and employment. By collaborating with businesses, educational institutions can design curricula and training programs that align with the skills and knowledge required in the workforce. This ensures that students are better prepared for the job market, reducing the skills gap and improving employment outcomes (Cappelli, 2015). The German dual education system involves close collaboration between vocational schools and businesses, where students alternate between classroom learning and on-the-job training. This system has been highly successful in ensuring that students graduate with practical skills that are immediately applicable in the workforce (Deissinger, 2015).
5. Collaborative partnerships can play a crucial role in addressing issues of equity and access in education, particularly in underserved or disadvantaged communities. Partnerships between schools, NGOs, and government agencies can provide

additional resources, support services, and learning opportunities to students who may not have access to high-quality education (Ainscow, 2005). At the Harlem Children's Zone (HCZ) in New York City a partnership between schools, community organizations, and social services aims at breaking the cycle of poverty through education. The HCZ provides comprehensive support to children and their families, including health care, early childhood education, after-school programs, and college preparation (Tough, 2009).

2.5.4 Challenges of Educational-Based Collaborative Partnerships

Despite the numerous benefits, educational-based collaborative partnerships also face several challenges. These include misaligned goals, communication issues, funding constraints, and sustainability concerns. The following sections outline some of the key challenges.

2.5.5 Misaligned Objectives and Expectations

One of the most significant challenges in educational-based collaborative partnerships is aligning the objectives and expectations of all partners. Different organizations may have varying priorities, timelines, and definitions of success, which can lead to conflicts or misunderstandings. For instance, businesses may prioritize short-term returns on investment, while educational institutions may focus on long-term student development (Brinkerhoff, 2002). In a school-business partnerships there may be a tension between the educational goals of the school and the commercial interests of the business partner. A business might want to use a partnership as a marketing opportunity, while the school may focus on improving student outcomes. Resolving these differences requires clear communication, mutual respect, and a shared vision for the partnership.

2.5.6 Communication and Collaboration Challenges

Effective communication is essential for the success of any collaborative partnership. However, communication challenges often arise when partners come from different sectors or organizational cultures. For instance, schools and businesses may have different decision-making processes, communication styles, or terminologies, which can create barriers to effective collaboration (Austin, 2000). These challenges can be particularly

pronounced in large-scale partnerships involving multiple organizations. To overcome communication barriers, it is important to establish clear channels of communication, designate liaisons or partnership managers, and create regular opportunities for dialogue and feedback.

2.5.7 Funding and Resource Constraints

While collaborative partnerships can provide access to additional resources, they also require funding and investment to operate effectively. Many partnerships rely on external grants or donations, which can be unpredictable and subject to changing priorities or economic conditions. When funding is limited, partnerships may struggle to achieve their goals or sustain their activities over the long term (Hodge & Greve, 2007). With the public-private partnerships (PPP), private companies may be reluctant to invest in long-term educational initiatives if they do not see immediate returns. Similarly, schools or universities may face budget cuts or shifting government policies that limit their ability to participate in partnerships.

2.5.8 Sustainability of Collaborative Efforts

Sustaining a collaborative partnership over time can be challenging, particularly when key stakeholders change or when external conditions shift. Partnerships that rely heavily on specific individuals or short-term funding are often vulnerable to collapse when those individuals leave or when funding dries up (Levine & Nidiffer, 1996). To ensure sustainability, partnerships must establish long-term commitments, diversify funding sources, and institutionalize the collaboration within their respective organizations. Educational-based collaborative partnerships have proven to be an effective mechanism for driving innovation, improving educational outcomes, and addressing systemic challenges in education. By bringing together diverse stakeholders, these partnerships can pool resources, share knowledge, and develop new approaches to teaching, learning, and workforce development.

However, collaborative partnerships also face significant challenges, including misaligned goals, communication barriers, and funding constraints. To overcome these challenges, it is essential for partners to establish clear communication, align their objectives, and create long-term, sustainable structures for collaboration. 876As education continues to evolve in

response to social, economic, and technological changes, collaborative partnerships will remain a critical strategy for ensuring that educational institutions can meet the needs of their students and society.

- Purpose of educational collaborations: Universities and educational institutions engage in partnerships to enhance curriculum, improve student outcomes, and share resources (Kezar, 2005).
- Examples of collaborations: Examples include cross-institutional partnerships, university-industry collaborations, and partnerships with government organizations aimed at improving educational access (Marginson, 2017).
- Global education collaborations: With globalization, cross-border educational partnerships have emerged, fostering cultural exchange and expanding learning opportunities (Altbach & Knight, 2007).

2.6 The Rise of Higher Education Partnerships

Higher education partnerships have expanded significantly in recent decades due to the changing landscape of academia. The following points highlight the trends that have emerged:

- Partnerships for research: Institutions partner with other universities, businesses, and government agencies to advance research efforts (Perkmann et al., 2013).
- Commercialization of research: Universities are increasingly involved in partnerships aimed at commercializing research, such as through technology transfer offices and university spin-offs (Etzkowitz, 2002).
- Collaborative models: Explore the rise of consortia, research clusters, and cross-disciplinary collaboration in higher education.

Educational-based collaborative partnerships have emerged as a vital mechanism for fostering innovation, resource sharing, and systemic improvement across various levels of education. These partnerships involve collaborations between educational institutions, businesses, non-governmental organizations (NGOs), governments, and communities to work towards shared goals in education. They play a key role in addressing complex challenges such as resource scarcity, access to quality education, equity in education, and preparing students for the evolving job market. By pooling expertise, knowledge, and resources, these partnerships aim to create new opportunities for students, enhance

educational outcomes, and address the broader social, economic, and technological needs of society.

Educational-based collaborative partnerships are formal or informal alliances between schools, universities, businesses, government bodies, and other stakeholders, aimed at achieving shared educational goals. These partnerships may focus on areas such as curriculum development, professional development for educators, research, community engagement, or addressing specific educational challenges such as dropout rates or the digital divide (Hill, 2009). Unlike traditional educational models, which often operate in silos, collaborative partnerships emphasize inter-organizational cooperation and shared responsibility. The partners typically bring different expertise and resources to the table, allowing for more comprehensive approaches to problem-solving and innovation (Levin & Riffel, 1997). For instance, a school district might partner with a technology company to develop a new curriculum for digital literacy, or a university may collaborate with a local government to provide adult education and workforce training.

2.6.1 The Evolution of Higher Education Partnerships

The concept of collaboration in higher education is not new, but its scale and complexity have grown significantly in recent decades. Traditionally, universities have formed partnerships with local governments or industries to enhance research and provide specialized training. However, the nature of these partnerships has evolved, driven by several factors, including globalization, technological advancements, and changing funding landscapes (Marginson & Considine, 2000).

During the 20th century, especially after World War II, governments increasingly viewed universities as essential engines for national development. The rise of the knowledge economy, characterized by the increasing importance of information and technology in economic development, further positioned universities as key players in driving innovation (Powell & Snellman, 2004). This period saw the growth of university-industry partnerships, where universities collaborated with industries to conduct research and development (R&D) that would fuel technological advancements and economic growth.

In the 21st century, the scope of higher education partnerships expanded beyond national borders. Globalization and technological advancements enabled universities to form transnational partnerships with other universities, industries, and governments. The Bologna Process in Europe, which sought to harmonize higher education systems across Europe, is a key example of how international partnerships have shaped higher education policy and

practice (Teichler, 2004). Similarly, the rise of digital technology and online learning platforms has enabled universities to collaborate across geographical boundaries to deliver education to a global audience.

2.6.2 Types of Higher Education Partnerships

Higher education partnerships can take various forms, depending on the goals, stakeholders, and nature of the collaboration. The following sections outline some of the most common types of higher education partnerships.

2.6.3 University-Industry Partnerships

One of the most prevalent forms of higher education partnerships is the collaboration between universities and industries. These partnerships typically focus on research and innovation, where universities conduct research that meets the needs of industries, while industries provide funding, resources, or expertise. This symbiotic relationship benefits both parties: universities gain access to funding and real-world data, while industries benefit from cutting-edge research and the development of new technologies (Perkmann et al., 2013). A successful university-industry partnership is the collaboration between the University of Cambridge and Rolls-Royce, which focuses on research in materials science and engineering. This partnership has resulted in significant advancements in the development of new materials for aerospace applications (Etzkowitz & Leydesdorff, 2000).

2.6.4 International University Collaborations

Globalization has facilitated the rise of international collaborations between universities. These partnerships can take the form of joint research projects, student and faculty exchange programs, dual degree programs, or the establishment of branch campuses abroad. International collaborations allow universities to tap into global networks of knowledge, attract international students, and enhance their global reputation (Altbach & Knight, 2007). New York University (NYU) has established branch campuses in Abu Dhabi and Shanghai, providing students with a global education experience while fostering cross-border collaboration in research and teaching (Wildavsky, 2010). Similarly, the Erasmus+

program in Europe facilitates mobility and cooperation among European universities, enhancing the internationalization of higher education across the continent (Teichler, 2012).

2.6.5 Public-Private Partnerships (PPPs)

Public-private partnerships (PPPs) involve collaborations between universities and government bodies or private sector organizations to deliver public services or infrastructure projects. In the higher education context, PPPs are often used to build new facilities, improve access to education, or enhance research capabilities. Governments may partner with private organizations to fund the construction of university buildings or to deliver educational programs aimed at addressing national skills gaps (Hodge & Greve, 2007). In Malaysia, the government has used PPPs to expand access to higher education by partnering with private universities to offer affordable degree programs to a growing population of students (Mok, 2008).

2.6.6 University-Community Partnerships

University-community partnerships focus on addressing local or regional challenges through collaboration between universities and local organizations or communities. These partnerships often aim to improve access to education, enhance community development, or address social issues such as poverty or inequality (Sandmann et al., 2009). A notable example is the University of Chicago's Urban Education Institute, which partners with local schools and community organizations to improve educational outcomes in underserved communities. This partnership involves research, teacher training, and the development of innovative educational programs (Bryk et al., 2010).

2.6.7 Drivers of the Rise of Higher Education Partnerships

Several factors have contributed to the rise of higher education partnerships. These drivers include globalization, changing government policies, funding pressures, and technological advancements.

Globalization has been a major driver of higher education partnerships. As the world becomes more interconnected, universities are increasingly forming partnerships with international institutions to enhance their global reach and reputation. Globalization has also

created a demand for internationalized curricula, student mobility, and cross-border research collaborations (Altbach, 2016). For universities, forming partnerships with institutions in other countries allows them to tap into global networks of knowledge and attract students from diverse backgrounds. The network is an international consortium of research-intensive universities that collaborate on research, student exchange programs, and joint educational initiatives. This network facilitates the sharing of knowledge and resources across borders, benefiting both students and faculty (Scott, 2006).

Government policies have also played a key role in fostering higher education partnerships. In many countries, governments have implemented policies that encourage universities to collaborate with industries, other universities, and international partners. These policies are often aimed at promoting innovation, improving educational quality, and addressing skills gaps in the labor market (Enders, 2004). The UK government's Research Excellence Framework (REF) incentivizes universities to collaborate with industries and other organizations to produce high-quality research with real-world impact. The REF assesses the quality and impact of research conducted by UK universities, rewarding institutions that demonstrate strong partnerships and collaboration (HEFCE, 2014).

Funding pressures have been a significant factor in the rise of higher education partnerships. As public funding for universities has declined in many countries, universities have sought alternative sources of funding through partnerships with industries, governments, and philanthropic organizations (Geiger, 2004). These partnerships provide universities with much-needed financial resources to support research, infrastructure development, and educational programs. In the United States, the decline in state funding for public universities has led many institutions to form partnerships with private companies and philanthropic organizations to secure funding for research and development (Slaughter & Rhoades, 2004). The Stanford University-Hewlett Foundation partnership is an example of how philanthropic funding can support innovative research in higher education.

Technological advancements have transformed the higher education landscape, enabling new forms of collaboration and partnership. The rise of online learning platforms, digital research tools, and communication technologies has made it easier for universities to collaborate across geographical boundaries. Technology has also facilitated the rise of massive open online courses (MOOCs) and other digital learning initiatives that allow universities to partner with external organizations to deliver education to a global audience (Marginson, 2010). The edX platform, founded by Harvard University and the Massachusetts Institute of Technology (MIT), is a MOOC platform that allows universities to offer free online

courses to students worldwide. This platform represents a new form of partnership between universities and technology companies, enabling universities to expand their reach and impact through digital education (Severance et al., 2015).

2.6.8 Benefits of Higher Education Partnerships

Higher education partnerships offer numerous benefits to universities, students, and society as a whole. These benefits include enhanced research capabilities, improved educational quality, increased access to education, and stronger ties between academia and industry.

One of the most significant benefits of higher education partnerships is the enhancement of research capabilities. By collaborating with industries, governments, and other universities, institutions can access additional resources, expertise, and data to conduct cutting-edge research. Partnerships also facilitate interdisciplinary research, where scholars from different fields collaborate to address complex global challenges (Perkmann & Walsh, 2007). The Cambridge-MIT Institute was a partnership between the University of Cambridge and MIT that aimed to foster research collaboration between the two institutions. This partnership led to significant advancements in areas such as engineering, biotechnology, and entrepreneurship (Edmondson et al., 2005).

Higher education partnerships can also improve the quality of education by providing students with access to new learning opportunities, resources, and expertise. For instance, partnerships between universities and industries often result in the development of new curricula that align with the needs of the labor market. These partnerships also provide students with internships, job placements, and hands-on experience in their chosen fields (Bray & Major, 2011). Partnerships can help expand access to education, particularly for underserved populations. For example, public-private partnerships in higher education can result in the development of affordable degree programs, online courses, and educational initiatives that reach students in remote or disadvantaged areas (Tilak, 2008).

Higher education partnerships strengthen the ties between academia and industry, ensuring that universities are producing graduates with the skills and knowledge needed in the workforce. These partnerships also enable the commercialization of research, where universities collaborate with industries to bring new technologies and innovations to the market (Etzkowitz, 2003). While higher education partnerships offer numerous benefits, they also pose significant challenges. These challenges include differences in organizational culture, misaligned goals, and issues related to intellectual property and funding.

Universities and external partners such as industries or governments often have different organizational cultures and priorities. For example, universities may prioritize academic freedom and long-term research, while industries may focus on short-term profitability and market-driven innovation (Berman, 2012). These differences can create tensions within partnerships, particularly when it comes to decision-making and resource allocation.

Misaligned goals are another common challenge in higher education partnerships. While universities may focus on producing high-quality research and education, external partners may have different priorities, such as generating profits or achieving political objectives. This misalignment can result in conflicts and undermine the success of the partnership (Brinkerhoff, 2002).

Intellectual property (IP) issues can arise in university-industry partnerships, particularly when it comes to the ownership of research outcomes and innovations. Universities may want to retain ownership of their research, while industries may seek exclusive rights to commercialize the results. Negotiating IP agreements that satisfy both parties can be a complex and contentious process (Geuna & Rossi, 2011).

Sustaining higher education partnerships over the long term can be challenging, particularly when funding is uncertain or dependent on external grants. Partnerships that rely on short-term funding may struggle to achieve their goals or continue their activities once the funding runs out. Universities and their partners must develop sustainable funding models and long-term commitments to ensure the success of their collaborations (Levine & Nidiffer, 1996).

The rise of higher education partnerships has transformed the landscape of higher education, enabling universities to collaborate with industries, governments, and international institutions to achieve shared goals. These partnerships offer numerous benefits, including enhanced research capabilities, improved educational quality, and stronger ties between academia and industry. However, they also pose significant challenges, such as differences in organizational culture, misaligned goals, and funding pressures. As universities continue to navigate the complexities of the 21st century, higher education partnerships will remain a critical strategy for addressing global challenges, fostering innovation, and ensuring the continued relevance of higher education in a rapidly changing world.

2.7 Post-compulsory education collaboration for Higher Education and Private Education providers

Post-compulsory education refers to educational programs offered after compulsory schooling, typically beginning at age 16 in many countries, and encompasses a wide range of pathways, including higher education (HE), vocational education, further education (FE), and adult learning. With the global demand for skills and higher qualifications rising, collaborations between higher education institutions (HEIs) and private education providers have become increasingly significant. These partnerships aim to widen access to education, enhance the quality of teaching and learning, and meet the evolving needs of the labor market. This literature review explores the emergence of such collaborations, their key drivers, benefits, and challenges, as well as their role in shaping post-compulsory education.

2.7.1 The Evolution of Post-Compulsory Education

Post-compulsory education has traditionally been seen as a bridge between compulsory schooling and further learning opportunities or employment. It includes various levels of education, such as A-levels, diplomas, apprenticeships, vocational training, and higher education. In recent decades, the boundaries between these educational pathways have become more fluid, with increased collaboration between different sectors, including private education providers (Gallacher & Reeve, 2002). Historically, most post-compulsory education was delivered by public institutions such as universities, further education colleges, and adult education centers. However, the late 20th century saw the rise of private education providers, often specializing in vocational training and professional development. These providers began to play a critical role in delivering specialized programs that aligned more closely with industry needs (Guile, 2006).

In response to the demands of globalization and the knowledge economy, there has been a growing recognition of the need for collaboration between HEIs and private education providers. The integration of vocational training, professional qualifications, and academic degrees has gained momentum, driven by the desire to provide students with flexible and diverse learning opportunities that better meet the needs of modern economies (Gordon, 2015).

2.7.2 The Rise of Collaboration Between Higher Education and Private Providers

Collaboration between higher education and private education providers has been influenced by various policy and economic drivers. Governments worldwide have increasingly promoted partnerships between public and private sectors as a strategy to expand access to education, improve educational outcomes, and enhance the quality of provision (Ball, 2012). In the context of post-compulsory education, these collaborations are often driven by the need to address skills gaps, increase workforce participation, and meet the demands of an increasingly competitive global economy. In the United Kingdom the government's focus on expanding higher education participation has led to a significant increase in partnerships between universities and private providers. Initiatives such as Higher Education Funding Council for England's (HEFCE) funding policies encouraged HEIs to partner with private organizations to deliver programs that cater to non-traditional students, including working adults and part-time learners (Levy, 2013).

In Australia, the deregulation of the vocational education and training (VET) sector in the 1990s facilitated the entry of private providers into the post-compulsory education landscape. This shift was part of a broader policy agenda aimed at increasing competition and improving the responsiveness of education and training systems to industry needs (Wheelahan, 2010). The resulting partnerships between universities and private VET providers have helped to create more seamless transitions for students moving from vocational training into higher education.

Globalization has also played a significant role in fostering collaboration between higher education and private education providers. As students and employers increasingly seek qualifications that are recognized internationally, HEIs have partnered with private providers to deliver programs that offer global credentials. These partnerships often involve transnational education (TNE) arrangements, where private providers deliver higher education programs on behalf of universities, either in the home country or abroad (Knight, 2013). The rise of international branch campuses, such as those established by Western universities in countries like China, Singapore, and the United Arab Emirates, is often facilitated through partnerships with local private education providers (Altbach & Knight, 2007). These collaborations allow universities to tap into new markets and expand their global reach, while private providers benefit from the prestige and academic expertise of their university partners.

2.7.3 Models of Collaboration in Post-Compulsory Education

Collaborations between higher education institutions and private education providers can take various forms, depending on the goals of the partnership and the specific educational context. The following sections describe some common models of collaboration in post-compulsory education. Pathway programs are one of the most prevalent forms of collaboration between HEIs and private providers. These programs are designed to prepare students for entry into higher education by offering foundational courses, language training, and academic skills development. Private providers often specialize in delivering these programs, while universities guarantee progression into their degree programs upon successful completion. Navitas, a global private education provider, partners with universities in countries such as Australia, the UK, and the United States to deliver pathway programs that prepare international students for university study. These programs help students improve their English language proficiency and academic readiness, enabling them to transition into undergraduate or postgraduate programs (Cantwell, 2015).

Another common model of collaboration involves the delivery of joint degrees or dual awards, where students receive qualifications from both a university and a private provider. These partnerships allow students to benefit from the strengths of both institutions, often combining academic rigor with industry-relevant skills and qualifications (Ruch, 2001). Pearson Education, a leading private education company, has collaborated with universities to offer BTEC Higher National Diplomas (HNDs) alongside degree programs. Students completing these programs gain both a vocational qualification and a university degree, enhancing their employability and providing them with a broader range of career options (Aldridge & Tuckett, 2011).

Work-integrated learning (WIL) and apprenticeship programs represent another key area of collaboration between HEIs and private education providers. These programs combine academic study with practical work experience, often delivered in partnership with employers. Private providers play a crucial role in facilitating these partnerships by delivering the vocational training component and ensuring that programs align with industry standards (Boud & Solomon, 2001). The UK Apprenticeship Levy was introduced in 2017 and has encouraged universities to partner with private training providers and employers to deliver degree apprenticeships. These programs allow students to earn a degree while gaining hands-on experience in the workplace, addressing both the skills needs of employers and the educational aspirations of students (Lester & Costley, 2010).

2.7.4 Benefits of Collaboration in Post-Compulsory Education

One of the primary benefits of collaboration between higher education and private education providers is the expansion of access to education. Partnerships with private providers enable universities to offer a wider range of programs, catering to diverse student populations, including international students, adult learners, and part-time students (Marginson, 2004). These partnerships can also help reduce barriers to entry by offering flexible learning pathways, such as online or blended learning, that accommodate the needs of working students or those with family commitments (Leahy & Neary, 2020). Kaplan International Colleges partner with universities around the world to offer flexible learning options, including online programs and part-time study, making higher education more accessible to non-traditional students (Ryan, 2012).

Collaborations between HEIs and private providers often focus on developing programs that are closely aligned with industry needs, thereby enhancing the employability of graduates. Private providers, many of which have strong connections with industry, bring valuable insights into the skills and knowledge required by employers. This collaboration ensures that students are not only gaining academic qualifications but also acquiring practical, work-ready skills (Tomlinson, 2017). The University of the West of Scotland (UWS) collaborates with private training providers to deliver programs that integrate academic study with vocational training, helping students develop the skills needed to succeed in their chosen professions (Keep, 2014).

Private providers often bring a high degree of innovation and flexibility to the design and delivery of educational programs. Their focus on meeting market demands and their experience with online learning platforms and other educational technologies can help universities adapt to the changing needs of students and employers (Cai & Yan, 2017). Collaborations with private providers can also enable universities to experiment with new teaching and learning methods, such as competency-based education or micro-credentials (Gallagher, 2019). The Open University in the UK has collaborated with private providers to develop online learning platforms and short courses that allow students to learn at their own pace and gain skills in specific areas without committing to a full degree program (Lane, 2012).

2.7.5 Challenges of Collaboration in Post-Compulsory Education

One of the key challenges in collaborations between HEIs and private education providers is ensuring the quality of educational provision. While private providers may offer flexible and innovative learning options, concerns have been raised about the variability in the quality of programs delivered by private institutions. Ensuring that programs meet the high academic standards required by universities can be difficult, particularly in cases where private providers are operating in competitive, profit-driven environments (Baskerville, 2013). In response to these concerns, many countries have implemented regulatory frameworks to ensure that private providers meet the same quality standards as public institutions. In the UK, for instance, the Quality Assurance Agency for Higher Education (QAA) plays a key role in monitoring the quality of programs delivered by private providers in collaboration with universities (Williams, 2016).

Regulatory and funding issues can also pose challenges for collaborations between HEIs and private providers. In many countries, private education providers are not eligible for the same levels of government funding as public institutions, which can create financial constraints for collaborative initiatives (Leahy & Neary, 2020). Additionally, differences in regulatory requirements for private and public providers can create administrative hurdles, particularly when it comes to accreditation, student funding, and data reporting (Clarke, 2020). The collaboration between higher education institutions and private education providers is becoming an integral part of the post-compulsory education landscape. These partnerships offer numerous benefits, including increased access to education, enhanced employability, and innovation in program delivery. However, they also pose challenges related to quality assurance, regulation, and funding. As demand for post-compulsory education continues to grow, it is essential for policymakers, institutions, and private providers to work together to develop sustainable, high-quality collaborations that meet the needs of students, employers, and society at large.

2.8 Reform in Higher Education and the Need for Change

Higher education systems worldwide have faced immense pressures for reform over the past few decades. These pressures stem from economic, social, technological, and political shifts, all of which have contributed to growing debates about the purpose, structure, and delivery of higher education (Marginson & Considine, 2000). Reform in higher education is not a novel concept; institutions have historically adapted to changes in knowledge production, the labour market, and societal needs. However, the pace and scale of

transformation in the 21st century, driven by globalization, technological advances, and shifting economic paradigms, have increased the urgency for more systemic and widespread changes in higher education systems (Marginson, 2016).

The need for reform in higher education is driven by a complex set of interrelated factors, including economic imperatives, changing student demographics, the rise of digital technology, globalization, and societal expectations. These forces have converged to challenge traditional higher education models, pushing institutions to reconsider their roles, structures, and delivery methods.

One of the most significant drivers of reform in higher education is the changing nature of the global economy and labour market. As economies become increasingly knowledge-based, there is a growing demand for a highly educated workforce equipped with critical thinking skills, creativity, and the ability to adapt to rapidly evolving industries (Barnett, 2018). Higher education institutions are now expected to produce graduates who can meet these labour market demands, which often requires rethinking curricula, teaching methods, and partnerships with industry (Altbach et al., 2009). In many countries, the funding of higher education has also undergone significant changes, with reductions in public funding and increased pressure on institutions to diversify revenue streams (Marginson, 2016). These economic pressures have led to the commercialization of higher education, with institutions increasingly focusing on efficiency, performance metrics, and market-oriented strategies (Olssen & Peters, 2005). This shift towards a more market-driven approach to higher education has raised concerns about the erosion of academic autonomy and the prioritization of economic outcomes over educational values (Brown & Carasso, 2013).

The rise of digital technology has fundamentally transformed the delivery of higher education. Online learning platforms, massive open online courses (MOOCs), and digital resources have enabled universities to expand access to education and offer more flexible learning opportunities (Selwyn, 2016). This digital revolution has also prompted calls for reform in teaching and learning methods, with a growing emphasis on integrating technology into the classroom, promoting digital literacy, and developing new pedagogical approaches that align with the needs of 21st-century learners (Garrison & Vaughan, 2008).

Technological advances have also facilitated new models of higher education delivery, such as blended learning, flipped classrooms, and competency-based education. These models challenge traditional lecture-based instruction and emphasize active, student-centered learning experiences (Horn & Staker, 2015). However, despite the potential benefits of technology-driven reforms, there are concerns about the digital divide, which can exacerbate

inequalities in access to higher education, particularly for students from disadvantaged backgrounds (Ravenscroft, 2011).

Globalization has significantly impacted higher education, particularly in terms of the internationalization of curricula, research collaboration, and student mobility (Altbach & Knight, 2007). Institutions are increasingly competing on a global scale for students, faculty, and research funding, which has led to the proliferation of international branch campuses, transnational education programs, and partnerships with institutions abroad (Knight, 2013). In response to these global trends, higher education institutions are being urged to reform their programs to incorporate international perspectives, foster cross-cultural competencies, and prepare students for a globalized workforce (Marginson & Van der Wende, 2007). However, the internationalization of higher education also raises challenges related to quality assurance, equity, and the commercialization of education (Stensaker et al., 2008).

The demographics of higher education students have changed dramatically over the past few decades. There has been an increase in non-traditional students, such as adult learners, part-time students, and those from diverse socio-economic backgrounds (Krause, 2012). These shifts have prompted calls for more flexible, inclusive, and learner-centered approaches to higher education. Institutions are now expected to cater to the needs of a more diverse student body by offering flexible learning pathways, such as online programs, work-integrated learning opportunities, and personalized learning experiences (Field, 2006). Moreover, students today expect more from their higher education experience. They are increasingly focused on the return on investment of their education, looking for programs that provide clear pathways to employment and opportunities for skill development (Tomlinson, 2017). This has led to growing demands for higher education reform to ensure that curricula are aligned with labor market needs, that students have access to career support services, and that institutions are transparent about graduate outcomes (Marginson, 2016).

2.8.1 Areas Requiring Reform in Higher Education

Given the diverse and complex challenges facing higher education, reform efforts must address multiple areas, including teaching and learning, governance, funding, and research. One of the most pressing areas for reform in higher education is teaching and learning. Traditional lecture-based approaches have been criticized for failing to engage students and develop the critical thinking, problem-solving, and collaboration skills needed in today's workforce (Barr & Tagg, 1995). There is growing recognition that higher education must shift from a content-delivery model to a more active, student-centered approach that emphasizes

experiential learning, critical thinking, and real-world problem-solving (Biggs & Tang, 2011). Reform efforts in this area often focus on promoting innovative pedagogical approaches, such as problem-based learning, flipped classrooms, and competency-based education (Garrison & Vaughan, 2008). These approaches prioritize active learning and student engagement, encouraging learners to take ownership of their education and apply their knowledge in meaningful contexts. Technology has also played a central role in reforming teaching and learning. The rise of online learning platforms and digital tools has expanded access to education, enabling institutions to offer more flexible learning options (Selwyn, 2016). However, the effective integration of technology into teaching and learning requires significant changes in institutional culture, staff training, and infrastructure investment (Laurillard, 2012).

Governance reform is another critical area of focus in higher education. In many countries, higher education institutions have traditionally enjoyed significant autonomy in terms of decision-making and governance. However, growing political and economic pressures have led to increased government oversight and regulation (De Boer et al., 2007). While greater accountability and transparency are necessary to ensure the efficient use of public resources, there are concerns that excessive regulation could undermine academic freedom and institutional autonomy (Shattock, 2010). To address these concerns, governance reforms often focus on promoting more participatory decision-making processes that involve faculty, staff, and students. There is also growing recognition of the need for more professionalized management structures that can balance academic priorities with financial sustainability (Middlehurst, 2010).

Funding is one of the most contentious issues in higher education reform. As public funding for higher education has declined in many countries, institutions have increasingly turned to alternative sources of revenue, such as tuition fees, private sector partnerships, and international student recruitment (Marginson, 2016). This shift has led to growing concerns about the affordability of higher education and the rising levels of student debt (Brown & Carasso, 2013). In response, some reform efforts have focused on developing more sustainable funding models that reduce reliance on student fees and provide greater financial support for low-income students. For example, income-contingent loan systems, tuition fee caps, and expanded scholarship programs have been implemented in various countries to address issues of affordability and access (Chapman, 2016). Additionally, there is increasing interest in public-private partnerships as a means of generating revenue while ensuring that education remains accessible and affordable for students (Teixeira et al., 2017).

Higher education institutions play a critical role in driving research and innovation, particularly in fields that contribute to economic development and societal well-being (Geuna & Muscio, 2009). However, the traditional research model, which prioritizes academic publications and basic research, has been criticized for being disconnected from the needs of industry and society (Boyer, 1996). Reform efforts in this area often focus on fostering greater collaboration between universities, industry, and government to ensure that research is more closely aligned with societal needs (Perkmann et al., 2013). There is also growing interest in promoting interdisciplinary research, which can address complex global challenges, such as climate change, public health, and technological innovation (Frodeman et al., 2010).

2.8.2 Reform Strategies in Higher Education

Various reform strategies have been implemented across different countries and regions to address the challenges facing higher education. While the specific approaches vary depending on the local context, some common strategies include policy interventions, market-driven reforms, and institutional-level changes. Government policies play a critical role in shaping higher education reform. In many countries, national governments have introduced reforms aimed at increasing accountability, improving quality, and expanding access to education. For example, the introduction of performance-based funding models in countries such as the United States and the UK has incentivized institutions to improve student outcomes, such as graduation rates and employability (Dougherty & Reddy, 2013). Additionally, policy interventions have focused on improving access to higher education for underrepresented groups, such as low-income students, minority groups, and adult learners. This has included expanding financial aid programs, implementing affirmative action policies, and developing flexible learning pathways (Field, 2006).

Market-driven reforms have also played a significant role in shaping higher education systems. These reforms are often driven by the need to increase competition, efficiency, and responsiveness to labor market demands (Olssen & Peters, 2005). In many cases, market-driven reforms have involved the introduction of performance metrics, league tables, and rankings to assess institutional quality and promote competition between institutions (Hazelkorn, 2015). While market-driven reforms have led to increased efficiency and responsiveness in some areas, they have also raised concerns about the commercialization of higher education and the potential negative impact on academic freedom and educational quality (Brown & Carasso, 2013).

At the institutional level, many universities have implemented reforms aimed at improving teaching and learning, enhancing governance structures, and diversifying funding streams. For example, institutions have introduced innovative pedagogical approaches, such as blended learning and work-integrated learning, to better meet the needs of students and employers (Garrison & Vaughan, 2008). Governance reforms have also focused on promoting more participatory decision-making processes and professionalizing management structures. This has included the creation of advisory boards, the introduction of performance management systems, and the development of strategic plans that align institutional priorities with broader societal needs (Middlehurst, 2010). The need for reform in higher education is clear, as institutions face unprecedented challenges driven by economic, technological, and societal shifts. While various strategies have been implemented to address these challenges, there is no one-size-fits-all solution to reforming higher education. Each country and institution must carefully consider its unique context and needs when designing and implementing reforms. Ultimately, the goal of higher education reform should be to create more flexible, inclusive, and responsive systems that prepare students for the demands of the 21st-century workforce while preserving the core values of higher education, such as academic freedom, equity, and the pursuit of knowledge.

Continuity is a challenge for all businesses and operations regardless of industry or sector and as growing pressure from competitors, shareholders and stakeholders increase, the need to identify where and how to integrate mechanisms to support this have become more evident (Nadiye, 2018). The ability to improve and sustain what an organisation can do is becoming more of a focussed effort that tries to balance the environmental, economic and social needs both past, current and future (Garza-Reyes, 2014). Raja et al (2017) suggest that continuous improvement (CI) applies to the ongoing improvement of goods and services, playing a crucial part for all organisations, whilst Lam et al (2015) refer to CI as a progressive journey that directly links to organisational performance.

The use of Lean practices and principles have emerged and grown over time, predominantly within manufacturing and in particular the car industry. Improvement has become a focus for many organisations and the need for developing strategies to implement and maintain this approach is now more evident as competitive advantage has become one of the keys to survival. Despite the nature and size of an organisation both quality improvement and continuous improvement are being sought through strategic planning for businesses across the globe (Anthony, 2016). The concept of Lean is sometimes confused with another improvement philosophy known as Agile. The two principles work in very different ways, the latter focussing on the development of methods through collaborations whilst the former

seeking to change behaviour. In manufacturing terms the lean philosophy aims to achieve high levels of efficiency through the identification and elimination of waste found within a process, thus improving the flow of goods, improving productivity and quality, ultimately changing behaviour (Tortorella and Fettermann (2017) cited in Qamar and Hall (2018). Agile refers to a set of values and principles that focus more on people, their interactions and how quickly or effectively they respond to changes within the business environment (Purvis et al, 2014).

Dubey and Gunasekaran (2014) state that agile within manufacturing is approached in such a way that aims to adopt strategies for addressing the environmental uncertainties caused by economic recession, variations in the product life cycle and supplier or technology issues. Raman and Bharadwaj (2016) examine the application of agile to the service industry and refer to the way in which the philosophy should be delivered proactively, reacting to the unanticipated needs for the service towards the customer. The authors also suggest that agile services should address the complex and volatile business environment through the ability to adapt various processes and procedures whilst utilising required combinations of the services marketing mix. The key within this philosophy would appear to be one of reaction, adaptation and flexibility.

Continuous improvement (CI) or Kaizen is a practice that drives excellence and innovation (Alvarado-Ramirez, 2017) through the challenges that business managers face in such a competitive environment (Arya and Choudhary, 2015). Continuous improvement is a philosophy that alludes to incremental changes or improvements that are derived through the careful and detailed analysis and scrutiny of an organisations practices and procedures (Ramadani and Gerguri, 2011). CI is achieved through methodologies that have evolved and been developed over a period of time and similar to that of Lean and Agile, originate from the manufacturing industry whereby competitiveness was, and still is, a key contributing factor thus it aims to focus on all aspects of the organisation (Singh and Singh, 2015). Milner and Savage (2016) refer to organisations, including private sector ones, having to deal with turbulent and highly complex business environments that are ever-changing and economically challenging, driving the need for change to maintain and improve their position. The authors also state that remaining competitive requires the desire and determination to develop, innovate and change through improving all parts of the business.

Studies of the service industry would suggest that the adoption of theoretical approaches that have been tried and tested within the manufacturing sector can only achieve a limited effect when applying them to intangible practices and procedures (Radnor and Osborne,

2013). This thinking of CI application to an industry that has customer service at its core, is seen by Saarijarvi et al (2013) as purely theoretical whereas Vargo and Lusch (2017) have more recently argued that the practical elements of CI should be developed more for the service industry in order that more theory is fostered. With customer service being the focus, organisations are seeking to adopt and introduce initiatives that aim to improve the quality of the provision through the ideals of Total Quality Management (TQM), namely Lean, Agile and CI (Yang et al, 2014). Koval et al (2018) state that this focus has emerged from the success of these philosophies in the manufacturing industry where they have gained and continue to gain successful outcomes. The author also goes on to state that this success within the manufacturing industry is the very reason why it has gained considerable interest and acceptance in the service industry.

The techniques of Total Quality Management are used to reduce any process variation thus resulting in a consistent standard, this is also the approach of ISO implementation, identify and then reduce or eliminate the waste or non-value added activities within the process, and so improve the overall customer service (Jayanth and Xu, 2016). Whilst the adoption and implementation of TQM and its collaborative elements are supported by literature for the manufacturing industry, the service industry, as yet, is still to produce evidence that it can be fully transitioned albeit in other formats and configurations. Koval et al (2018) identify and attribute the failure of CI to the conditions for continued effectiveness and the fact that these cannot easily be highlighted. Stelson et al (2016) suggest other reasons for failure stating that this is caused by managers focussing on tools and other mechanisms for success, whereas the factors that should be of attention are those relating to human intervention through leadership and cultural changes within the workplace. Although some studies suggest a failure rate as high as 90% (Bhasin, 2008), Fuller et al (2014) explains that these failures receive less attention than required, Peltokorpi et al (2008) stating that the challenges to effective CI and the value creation that it offers stem from a number of conflicting goals, namely poor managerial support, organisations or departments not sharing information or knowledge with each other and insufficient availability of resources (Burgess and Radnor, 2013).

Whilst the education sector overall has fell behind in terms of applying continuous improvement, O'Reilly et al (2018) suggests that the interest in this philosophy has now grown with an increasing number of higher education institutions becoming more actively involved in its potential benefits. O'Reilly also states that more systematic approaches are required if the higher education environment is to fully embrace this philosophy and build an appropriate conceptual and guiding framework. Waterbury (2015) suggest that, whilst many

HEI's are now accepting lean, there are still challenges that need to be overcome. This would support the view of Koval et al (2018) and Burgess and Radnor (2013) also alluding to the challenges that are currently resulting in failure to adopt the philosophy effectively. It was these challenges that led to Anthony et al (2012) identifying a set of critical success factors (CSF's) with successive work by Albliwi et al (2014) to result in a set of key readiness factors.

2.9 Lean in the Service Sector

Lean thinking, initially developed within the manufacturing industry by Toyota in the mid-20th century, has gained widespread adoption across various sectors, including services. Lean principles focus on improving operational efficiency by eliminating waste, optimizing processes, and creating value for customers (Womack & Jones, 1996). While Lean was primarily designed for manufacturing processes, its extension into the service sector has led to new applications, challenges, and opportunities. Lean principles revolve around five core elements: defining value from the customer's perspective, identifying the value stream, creating flow, establishing pull, and striving for perfection (Womack & Jones, 1996). These elements, though initially developed for manufacturing, have been adapted to the service sector to address inefficiencies and improve service delivery.

1. **Defining Value from the Customer's Perspective:** In service settings, value is often defined by the customer's experience and satisfaction. Unlike manufacturing, where value is tangible, in services, value is often intangible, such as the speed of delivery, accuracy, and customer support (Ziskovsky & Zeller, 2010). Thus, service organizations must focus on understanding the customer's needs and designing processes that deliver value in a timely and effective manner.
2. **Identifying the Value Stream:** In the service sector, the value stream consists of all activities that contribute to delivering the service, from customer inquiries to the final delivery of service. This is often more complex than in manufacturing due to the variability of customer needs, the human element, and the flow of information (Seddon, 2008). Mapping the value stream in services allows organizations to identify non-value-added activities (waste) and streamline processes.
3. **Creating Flow:** Achieving a smooth flow of services is one of the significant challenges in the service sector, primarily due to unpredictable demand and the high degree of customization required (Radnor & Johnston, 2013). The goal is to minimize interruptions and delays in service delivery, ensuring that the process is as continuous and streamlined as possible.

4. **Establishing Pull:** In a service environment, pull systems are designed to respond to customer demand rather than producing services ahead of time (Hines et al., 2004). Pull systems are particularly relevant in areas such as healthcare, banking, and customer support, where services are initiated by customer needs, and resources are allocated accordingly.
5. **Striving for Perfection:** Continuous improvement (kaizen) is at the heart of Lean thinking. In the service sector, this involves regularly reviewing processes, gathering feedback, and making incremental changes to enhance efficiency and customer satisfaction (Radnor et al., 2006). This pursuit of perfection requires a culture of ongoing learning and adaptability.

In response to the increasingly competitive environment, organizations strive to enhance their operations by addressing specific needs shaped by market demands (Hallgren & Olhager, 2009). Over time, production processes have evolved to become more efficient, allowing companies to distinguish themselves from competitors (Gunasekaran et al., 2019; Meredith & McTavish, 1992; Prince & Kay, 2003). As a result, businesses continuously seek methods for improvement and the creation of sustainable competitive advantages (Bruce et al., 2004). One such approach that has been widely adopted is "lean" or "lean production." Since the 1990s, lean production has garnered significant interest among scholars and practitioners (Holweg, 2007). Initially developed in the manufacturing sector, lean focuses on enhancing customer value by eliminating non-value-adding activities in work processes (Melton, 2005; Stone, 2012; Van Dun, Hicks, & Wilderom, 2017). Over the years, lean principles have extended beyond manufacturing to various other sectors.

However, lean production has faced criticism, particularly for its negative impact on employees and their well-being, as it was initially implemented with a heavy focus on tools and processes, often overlooking the human element (Dabhilkar & Åhlström, 2013; Hines et al., 2004). In response to this criticism, lean has evolved from a set of "hard" tools such as Just-in-Time (JIT), Kanban, and Jidoka, to a more holistic approach that incorporates both technical and human-centric aspects, known as lean management (Danese et al., 2018). This evolution led to the inclusion of "soft" practices such as training, motivation, empowerment, and responsibility (Hines et al., 2004; Shah & Ward, 2007). Research has shown that combining both hard and soft practices can amplify the effectiveness of lean (Bortolotti, Boscari, & Danese, 2015).

While lean has become one of the most widely used and effective production systems, agile has emerged as an alternative approach and is gaining prominence as a new paradigm

(O'Brien, 2013). Agile evolved from earlier manufacturing concepts and communication technologies (Yusuf et al., 1999). It emphasizes flexibility and responsiveness to unforeseen changes in a volatile marketplace (Mason-Jones, Naylor, & Towill, 2000). Agile involves adapting to unexpected situations in a cost-effective and timely manner while maintaining a broad scope (Prince & Kay, 2003). The need for greater organizational responsiveness has led to the concept of "agile manufacturing," which naturally developed from lean manufacturing (Gunasekaran, 1999).

The agile approach has also been adopted in fields beyond manufacturing, such as software development, where it resulted in the creation of the Agile Manifesto in 2001 (Kettunen, 2009). Since then, agile has expanded to other areas of project management and process improvement. While lean and agile are often viewed as competing methodologies, scholars are increasingly recognizing that the two approaches overlap in certain areas (Hallgren & Olhager, 2009; McCullen & Towill, 2001; Qamar et al., 2018; Wang et al., 2012). Some even coined the term "leagile" to describe the significant intersection between the two paradigms (Mason-Jones et al., 2000; Naylor et al., 1999; Van Hoek, 2000).

When discussing lean and agile, they are frequently treated as systems of practices that encompass not only technical processes but also cultural values and philosophical principles (Hines et al., 2004; Petersen, 2010; Shah & Ward, 2007). Despite this, there remains some confusion regarding the specific principles underlying each approach and how they should be implemented (Purvis et al., 2014). Moreover, much of the existing literature focuses on comparing the two approaches in a manufacturing context, often neglecting the human aspects that are critical to both lean and agile implementation (Hallgren & Olhager, 2009; Prince & Kay, 2003; Qamar et al., 2018). Additionally, while research on agile methods has expanded in recent years, there is still limited knowledge about the human side of agile teams (Grass, Backmann, & Hoegl, 2020). Early lean studies were primarily tool-oriented, but more recent research has called for a deeper understanding of the behavioral and people-oriented components of lean (Shah & Ward, 2007).

To better understand the relationship between lean and agile, a comparative analysis of the two approaches is necessary, focusing on their principles, practices, and team behaviors. By examining these factors, organizations can make informed decisions about which approach, or a combination of both, best fits their unique needs and goals.

In today's competitive and dynamic environments, many industries, including manufacturing, have adopted agile methodologies to maintain sustainability and competitiveness. The concept of agile manufacturing emerged in the early 1990s as a response to the growing

need for adaptability in uncertain markets (Yusuf et al., 1999). First introduced by researchers at the Iacocca Institute at Lehigh University in 1991, agile manufacturing was recommended as a key strategy to ensure competitiveness in a global manufacturing landscape. The report from the Iacocca Institute (1991) became highly influential and widely accepted by academics, industry practitioners, and policymakers (Yusuf et al., 1999).

Agile manufacturing aims to help organizations respond quickly and effectively to changing market conditions, allowing them to stay ahead of competitors by identifying new opportunities and product features (Gunasekaran et al., 2019). This methodology emphasizes the need for companies to quickly adjust to shifts in customer demand and market fluctuations (Nambiar, 2010; Naylor et al., 1999). Similarly, the software development industry has faced comparable challenges, requiring rapid adaptation to stay competitive. Traditional development models, such as Waterfall, were often too rigid, prompting the creation of new methodologies like XP and Scrum (Kettunen, 2009). By the late 1990s, agile principles had gained traction in software development, culminating in the release of the Agile Manifesto in 2001 (Kettunen, 2009). The Agile Manifesto outlines key principles for agile frameworks, emphasizing flexibility and responsiveness to change over rigid planning.

Agility, in this context, refers to an organization's ability to be flexible, responsive, and adaptable to change (Anderson, 2003). This concept is not limited to manufacturing or software development; it applies to a wide range of industries. According to the Cambridge Dictionary (2020), agility in business is defined as "a company's ability to account for market changes." Therefore, agility can be viewed as the capacity to respond to change, while "agile" refers to the set of tools and techniques used to achieve this adaptability (Hoda et al., 2011).

Agility manifests in different areas of business, including enterprise agility, business agility, IT agility, and agile workforce management. Though each field approaches agility from different perspectives, the overarching goal remains the same: enabling organizations to respond quickly and effectively to change (Kettunen, 2009). Agile methods, characterized by minimal documentation and flexible planning, allow for greater adaptability compared to traditional approaches (Serrador & Pinto, 2015). Agile project management incorporates iterative development, continuous customer feedback, and frequent stakeholder communication to ensure that projects remain flexible and responsive to evolving conditions (Gren et al., 2020; Hassan et al., 2020). Agile methodologies initially developed for manufacturing and software development, have broader applications across various sectors. Their focus on adaptability, flexibility, and responsiveness has made them a valuable

approach in environments that demand quick adjustments and continuous innovation. The principles of agility are increasingly being applied to higher education and other fields, helping organizations and institutions navigate uncertainty and dynamic challenges.

2.9.1 Challenges of Implementing Lean in the Service Sector

Despite its success in manufacturing, implementing Lean in the service sector comes with unique challenges. These challenges largely stem from the nature of services, which are often intangible, heterogeneous, and reliant on human interaction. The key obstacles typically faced are:

1. **Intangibility and Invisibility of Processes:** Unlike manufacturing, where the production process and outputs are tangible, service processes are often invisible and involve intangible elements such as customer interactions and experience (Bowen & Youngdahl, 1998). This makes it more difficult to map processes and identify areas of waste. Service activities such as customer inquiries, decision-making, and support are not easily observable or measurable, complicating efforts to streamline processes.
2. **Variability and Unpredictability of Demand:** In services, customer demand is often unpredictable and variable, making it challenging to standardize processes (Seddon, 2008). For example, in healthcare, patient needs vary significantly, and services must be customized accordingly. The unpredictable nature of demand also makes it difficult to implement flow and pull systems, as customer requests can arrive at irregular intervals, causing bottlenecks and delays.
3. **Human Element and Employee Engagement:** A critical component of service delivery is the human interaction between employees and customers. Employee engagement is essential for the successful implementation of Lean in services, as many service processes rely on the decision-making and judgment of employees (Hadid & Mansouri, 2014). However, the introduction of Lean can be met with resistance from employees who fear that process standardization might undermine their autonomy and reduce the quality of personalized service.
4. **Cultural and Organizational Barriers:** The successful adoption of Lean in services requires a shift in organizational culture towards continuous improvement, collaboration, and customer focus. This can be difficult in organizations that have deeply ingrained hierarchical structures or lack a clear commitment to change (Radnor et al., 2006). Moreover, top-down approaches to implementing Lean can fail

if employees are not actively involved in the process and given the necessary training and support.

2.9.2 Strategies for Successful Lean Implementation in Services

To overcome these challenges, various strategies have been proposed in the literature. These strategies include customizing Lean tools for service environments, emphasizing employee involvement, and fostering a culture of continuous improvement.

1. **Adapting Lean Tools for Service Processes:** While many Lean tools, such as value stream mapping and 5S, were developed for manufacturing, they can be adapted for services with some modification. For example, value stream mapping in services may focus on the flow of information and customer interactions rather than physical goods (Swank, 2003). Tools like Kanban and Just-In-Time (JIT) have also been successfully adapted to service environments such as healthcare and banking, where they help manage demand and allocate resources efficiently (Hines et al., 2004).
2. **Employee Involvement and Empowerment:** Engaging employees in the Lean process is crucial, particularly in service environments where much of the work is customer-facing and relies on employee judgment. Employees need to be empowered to suggest improvements and participate in decision-making (Radnor & Johnston, 2013). This can be achieved through training, open communication, and creating a supportive culture where employees feel valued and motivated to contribute to Lean initiatives.
3. **Focus on Customer-Centered Processes:** In services, the customer is at the heart of value creation, so Lean initiatives must focus on improving the customer experience. This involves not only streamlining back-office processes but also enhancing front-line interactions (Bowen & Youngdahl, 1998). Techniques such as service blueprinting can help identify pain points in the customer journey and create more efficient, value-adding interactions.
4. **Continuous Improvement and Feedback Loops:** A core element of Lean is continuous improvement (kaizen), which involves regularly reviewing processes and making incremental changes. In service settings, this requires creating mechanisms for gathering customer feedback and using this data to inform process improvements (Radnor et al., 2006). Additionally, service organizations should establish clear

metrics for measuring success, such as customer satisfaction, service delivery times, and error rates.

2.9.3 Impact of Lean on Service Quality and Operational Efficiency

The adoption of Lean in the service sector has been associated with significant improvements in both service quality and operational efficiency. Various studies have documented the positive outcomes of Lean implementation in areas such as healthcare, banking, and hospitality.

1. **Improved Service Quality:** One of the main goals of Lean in services is to enhance the quality of service delivery by eliminating waste, reducing errors, and improving responsiveness (Bowen & Youngdahl, 1998). In healthcare, for example, Lean initiatives have been shown to reduce patient waiting times, improve the accuracy of diagnoses, and enhance overall patient satisfaction (Brandao de Souza, 2009). Similarly, in the banking sector, Lean has been used to streamline processes such as loan approvals and customer inquiries, resulting in faster service and higher customer satisfaction (Piercy & Rich, 2009).
2. **Enhanced Operational Efficiency:** Lean's focus on eliminating waste and optimizing processes has led to increased operational efficiency in service organizations. For instance, in healthcare, Lean tools such as value stream mapping and Kanban have been used to reduce bottlenecks, streamline patient flow, and optimize resource allocation (Brandao de Souza, 2009). In the hospitality sector, Lean has been applied to improve housekeeping processes, reduce wait times at check-in, and enhance the overall efficiency of hotel operations (Taylor & Taylor, 2009).
3. **Cost Reduction:** By reducing inefficiencies, errors, and delays, Lean can lead to significant cost savings for service organizations. For example, in healthcare, Lean initiatives have been shown to reduce the cost of care by minimizing waste in areas such as inventory management, patient flow, and administrative processes (Kim et al., 2006). Similarly, in financial services, Lean has been used to reduce operational costs by streamlining back-office processes and automating routine tasks (Piercy & Rich, 2009).
4. **Customer Satisfaction and Retention:** Lean's emphasis on delivering value to the customer has been linked to higher levels of customer satisfaction and retention in service organizations (Hines et al., 2004). By focusing on eliminating non-value-

added activities and improving service quality, Lean helps create a more positive customer experience. This is particularly important in sectors such as healthcare and hospitality, where customer satisfaction is closely tied to organizational success.

Lean has proven to be a powerful framework for improving operational efficiency, service quality, and customer satisfaction in the service sector. Despite the challenges of adapting Lean to service environments, successful implementations have demonstrated that Lean can lead to significant improvements in areas such as healthcare, banking, and hospitality. However, the intangible nature of services, variability in demand, and the human element present unique challenges that must be addressed through customized Lean tools, employee engagement, and a focus on customer-centered processes. As service organizations continue to adopt Lean, further research is needed to explore its long-term impact and potential for innovation in the sector.

2.10 Lean in Higher Education

Lean principles, originating from the Toyota Production System, have been widely adopted across various sectors, including healthcare, finance, and education. Lean aims to improve efficiency by eliminating waste, optimizing processes, and delivering maximum value to customers (Womack & Jones, 1996). In the context of higher education, Lean practices focus on streamlining administrative processes, enhancing student services, and improving overall institutional performance (Balzer, 2010). While the application of Lean in higher education is relatively recent compared to other industries, it has gained traction due to the increasing pressure on universities to operate more efficiently amidst budget constraints, rising tuition costs, and heightened demand for accountability and quality.

Lean principles revolve around five core concepts: defining value from the customer's perspective, mapping the value stream, ensuring continuous flow, establishing a pull system, and striving for perfection (Womack & Jones, 1996). When applied to higher education, these principles are adapted to fit the specific needs and structures of academic institutions.

1. **Defining Value in Higher Education:** In higher education, the "customers" are typically students, but also include faculty, staff, and external stakeholders such as employers. Value is defined by the quality of education, the efficiency of administrative processes, and the overall student experience (Comm & Mathaisel, 2005). Lean encourages institutions to focus on what matters most to their

"customers" by improving areas such as registration, financial aid processing, academic advising, and classroom experiences.

2. **Mapping the Value Stream:** The value stream in higher education consists of the sequence of activities that contribute to the delivery of educational services, from admissions to graduation. Lean practitioners in higher education aim to map these processes to identify and eliminate non-value-adding activities (waste) such as redundant paperwork, inefficient course scheduling, and long processing times for student services (Emiliani, 2015). This enables institutions to focus on streamlining operations and delivering better service to students.
3. **Ensuring Continuous Flow:** Achieving a smooth and continuous flow of educational services can be challenging in higher education due to the complexity of academic programs, faculty workloads, and administrative tasks. Lean aims to reduce delays and bottlenecks in service delivery by improving workflow and removing unnecessary steps in administrative processes (Radnor & Bucci, 2011). For instance, universities have used Lean to reduce the time it takes to process student applications, financial aid, and graduation paperwork.
4. **Establishing a Pull System:** A pull system in higher education means that services are provided based on demand rather than predetermined schedules. For example, Lean can help universities create a more flexible scheduling system that responds to student needs in real-time, ensuring that courses are offered when students need them and that administrative services are provided promptly (Antony et al., 2012).
5. **Striving for Perfection:** Continuous improvement is a fundamental aspect of Lean. In higher education, this involves regularly assessing and refining processes, gathering feedback from students and staff, and implementing incremental changes to enhance efficiency and service quality (Balzer et al., 2016). Institutions that adopt Lean must foster a culture of ongoing improvement where all members of the organization are encouraged to contribute ideas for process optimization.

A number of studies have highlighted the potential benefits of applying Lean practices in higher education. One such study was at Nottingham Trent University in 2007 when their Business School initiated the preparation and implementation of lean practices and procedures (Yazdani and Barton, 2013). There were a number of reasons that influenced this decision. As the demand for business and management programmes grew, both in the UK and internationally, Nottingham Business School (NBS) attempted to differentiate itself from all other business schools in the UK. Its ultimate aim was to transform business and industry by sharing advanced business and management knowledge in addition to

developing students who were both highly skilled and prepared for employment through its educational programmes.

Based on the success of Jaguar Land Rover (JLR) the NBS strategy was inspired by the successful introduction and implementation of Lean in the Jaguar/Land Rover (JLR) product development system (Yazdani, 2006). The approach at NBS was intentionally gradual and incremental, chosen as the most effective way to establish Lean as a sustainable operating system that continuously drives improvements. The NBS Lean Operating System encompasses key elements, including Structure, Management and Leadership, Processes, Tools and Technologies, with a strong emphasis on staff engagement. This approach was considered more beneficial than a tool and method-focused implementation of Lean, which can often lose momentum after a few business processes have been improved.

The benefits of applying lean into HE primarily relate to improvements in efficiency, cost reduction, service quality, and student satisfaction, these points being expanded further below:

1. **Increased Efficiency:** One of the primary goals of Lean is to reduce waste and improve operational efficiency. In higher education, Lean has been used to streamline various administrative processes such as admissions, financial aid processing, and course scheduling (Comm & Mathaisel, 2005). For example, the University of Central Oklahoma reported a reduction in the time required to process student applications by implementing Lean, leading to faster decision-making and improved service delivery (Hines & Lethbridge, 2008).
2. **Cost Reduction:** Lean's emphasis on eliminating waste can lead to significant cost savings for higher education institutions. By identifying and eliminating non-value-adding activities, universities can reduce administrative overhead and redirect resources toward core educational functions (Emiliani, 2005). For instance, several institutions have reported reduced costs in areas such as procurement, facilities management, and student services after implementing Lean initiatives (Antony et al., 2012).
3. **Improved Service Quality:** Lean helps universities focus on improving the quality of services they provide to students, faculty, and staff. This can include faster response times, more accurate and efficient processes, and better communication between departments (Balzer, 2010). A study conducted at Rensselaer Polytechnic Institute found that Lean initiatives led to improved student advising, reduced registration

errors, and enhanced communication between students and academic departments (Balzer et al., 2016).

4. **Enhanced Student Satisfaction:** By improving the efficiency and quality of services, Lean can lead to higher levels of student satisfaction. When administrative processes run smoothly and students receive timely and accurate information, they are more likely to have a positive experience with the institution (Comm & Mathaisel, 2005). In particular, universities that have implemented Lean to improve student advising, registration, and financial aid services have reported higher satisfaction rates among students (Hines & Lethbridge, 2008).

2.10.1 Challenges of Implementing Lean in Higher Education

Despite the potential benefits, the implementation of Lean in higher education is not without its challenges. These challenges stem from the unique nature of academic institutions, which are often resistant to change and operate in a complex, decentralized environment.

1. **Cultural Resistance:** One of the most significant challenges of implementing Lean in higher education is cultural resistance from faculty and staff. Many academic institutions have a long history of operating in a hierarchical and siloed manner, with little focus on operational efficiency (Radnor & Bucci, 2011). Faculty members, in particular, may view Lean as a threat to academic freedom and autonomy, fearing that process standardization could undermine the quality of education (Balzer et al., 2016). Overcoming this resistance requires strong leadership, clear communication, and a commitment to fostering a culture of continuous improvement.
2. **Complexity of Academic Processes:** Higher education institutions are inherently complex, with a wide range of academic programs, departments, and administrative functions. This complexity makes it difficult to apply Lean principles in a uniform manner across the institution (Emiliani, 2015). For example, while Lean may be effective in streamlining administrative processes, it can be more challenging to apply in academic areas where teaching and research are less easily standardized.
3. **Decentralized Decision-Making:** Many universities operate in a decentralized manner, with individual departments having significant autonomy over their operations. This can create challenges for implementing Lean, as departments may be reluctant to adopt standardized processes or share resources (Comm & Mathaisel, 2005). To overcome this, institutions need to foster greater collaboration

and communication between departments and ensure that Lean initiatives are aligned with the institution's overall strategic goals.

4. **Measuring Success:** Measuring the success of Lean initiatives in higher education can be challenging, particularly when it comes to quantifying improvements in service quality and student satisfaction (Antony et al., 2012). While Lean can lead to measurable improvements in efficiency and cost reduction, its impact on educational outcomes and student learning is more difficult to assess. This highlights the need for institutions to develop clear metrics for evaluating the success of Lean initiatives and to ensure that these metrics align with their broader educational objectives.

Several higher education institutions have successfully implemented Lean to improve their operations, providing valuable insights into the potential of Lean in this sector.

1. **University of Central Oklahoma:** The University of Central Oklahoma implemented Lean to improve its admissions process, resulting in a 50% reduction in the time required to process student applications (Hines & Lethbridge, 2008). The university also used Lean to streamline its financial aid processes, leading to faster disbursement of funds to students and higher satisfaction rates.
2. **Rensselaer Polytechnic Institute:** Rensselaer Polytechnic Institute applied Lean to improve its student advising and registration processes, leading to a reduction in registration errors and improved communication between students and academic departments (Balzer et al., 2016). The university also reported increased student satisfaction with the advising process and a more efficient use of staff resources.
3. **Plymouth University:** Plymouth University implemented Lean to enhance its administrative processes, particularly in the areas of procurement and facilities management. The university reported significant cost savings and improved operational efficiency, with Lean helping to streamline workflows and reduce waste (Radnor & Bucci, 2011).

Lean has emerged as a promising approach for improving efficiency, service quality, and student satisfaction in higher education. By applying Lean principles to administrative processes, universities can reduce waste, streamline operations, and deliver better services to students and staff. However, the successful implementation of Lean in higher education requires overcoming significant challenges, including cultural resistance, the complexity of academic processes, and the decentralized nature of decision-making. Institutions that are able to address these challenges and foster a culture of continuous improvement stand to benefit from Lean's potential to transform higher education.

2.10.2 Higher Education Preparedness for Change

Higher education institutions (HEIs) across the globe are facing increasing pressures to adapt to a rapidly evolving educational landscape. Factors such as technological advancements, globalization, demographic shifts, and rising student expectations are prompting the need for significant change. Additionally, economic pressures, competition, and policy reforms have also contributed to the urgency for HEIs to rethink their traditional models. Preparedness for change in higher education involves understanding the capacity of institutions to adapt to external pressures and innovate in ways that meet current and future demands.

1. **Globalization and Marketization:** Globalization has redefined the role of universities by transforming them into entities that must compete on a global scale for students, faculty, and research funding (Altbach & Knight, 2007). Market-driven forces have also compelled universities to adopt business-like approaches, focusing on student recruitment, branding, and service delivery. As universities are forced to compete globally, they need to be agile in adapting to external market forces, which requires a high level of preparedness (Marginson, 2006).
2. **Technological Advancements:** Technological change is one of the most critical drivers affecting higher education. The rise of online learning platforms, massive open online courses (MOOCs), and digital resources have disrupted traditional teaching methods and delivery systems (Bates & Sangrà, 2011). To remain relevant, universities must embrace new forms of teaching, learning, and research, requiring considerable technological preparedness (Bichsel, 2012). This involves not only investment in infrastructure but also upskilling faculty and staff to ensure smooth transitions to blended learning models and digital campuses.
3. **Economic Constraints:** Shrinking public funding and growing student debt are placing significant financial pressures on HEIs, especially in the United States and the UK (Altbach, Reisberg, & Rumbley, 2009). Budget cuts and financial instability force institutions to find innovative ways to maintain quality education while controlling costs. Preparedness for economic change, therefore, includes institutional capacity to manage finances effectively, develop new revenue streams, and invest strategically in key areas that promote sustainability.
4. **Demographic Shifts:** Changes in student demographics, including increased diversity and the rise of non-traditional students (e.g., working adults, part-time

students), require universities to adapt their policies and practices (Yarnall, Tennant, & Stites, 2016). This demands changes in curriculum delivery, student support services, and campus facilities. Institutions must also be culturally prepared to embrace diversity and inclusivity to remain competitive in attracting and retaining students.

The ability of higher education institutions to respond to change is largely dependent on their organizational structure and flexibility. Institutions with rigid, hierarchical governance structures often struggle to adapt to new demands and external pressures (Tierney, 1999). Organizational flexibility refers to the institution's capacity to alter its structure, processes, and strategies in response to evolving circumstances. Flexibility in curriculum design, program delivery, and student services is critical to fostering institutional agility and preparedness for change (Black, 2015). A study by Jones and de Wit (2012) highlights that universities that adopt a decentralized, flexible model are better equipped to respond to environmental changes. This is because decentralized decision-making allows individual units (such as departments or faculties) to implement changes tailored to their specific needs and contexts. In contrast, universities that follow a highly centralized model may experience delays in decision-making, which can hinder their responsiveness to change.

Leadership plays a pivotal role in guiding institutions through periods of change. Strong, visionary leadership can help create a culture of innovation and openness to change (Fullan & Scott, 2009). Leaders in higher education must balance the immediate needs of the institution with long-term strategic goals that position the university for future success. Effective leaders must communicate a clear vision, engage stakeholders, and foster collaboration to ensure institutional buy-in during times of transformation (Heifetz & Linsky, 2002). Kotter's (1996) model of change management emphasizes the importance of leadership in driving change through stages such as creating urgency, forming a guiding coalition, and institutionalizing new approaches. HEIs that have successfully navigated significant changes often have strong leadership teams that are able to motivate and mobilize their organizations toward common goals.

Organisational culture significantly influences how well institutions are prepared for change. A culture that encourages innovation, risk-taking, and continuous improvement is more conducive to change (Tierney, 1999). However, higher education institutions are traditionally conservative, with long-established norms, practices, and values that can resist change. Faculty members, in particular, may resist changes that they perceive as threatening to academic freedom or their autonomy (Birnbaum, 2000). Research by Kezar and Eckel

(2002) suggests that creating a supportive organizational culture is essential for fostering preparedness for change. They identify several key cultural elements that contribute to successful change initiatives, including trust, collaboration, and a shared vision. Institutions that engage faculty and staff in decision-making processes and encourage open communication are more likely to overcome resistance and achieve sustainable change.

Change management theories have been widely applied to help HEIs navigate the challenges of transformation. Kotter's eight-step process, Lewin's change model, and other frameworks provide a structured approach for guiding institutions through change (Kotter, 1996; Lewin, 1951). These models emphasize the importance of planning, communication, and stakeholder engagement. However, implementing change in higher education often requires adaptation of these models to fit the unique context of academic institutions (Kezar, 2014). HEIs that implement change effectively do so by prioritizing inclusive, participatory processes that involve all stakeholders (faculty, staff, students, and administrators) in the change process (Kezar & Eckel, 2002). Such an approach fosters a sense of ownership and accountability, making it more likely that change efforts will be successful.

Technological preparedness is a critical dimension of higher education's ability to adapt to change. The integration of technology into teaching, learning, and research has become increasingly important in recent years, particularly with the rise of online education and digital learning platforms (Garrison & Vaughan, 2008). Institutions that are technologically prepared can offer more flexible and accessible learning options, such as blended learning and MOOCs, which can cater to diverse student populations (Bates & Sangrà, 2011). However, technology implementation must be strategic. Bichsel (2012) argues that technological preparedness involves more than simply acquiring new tools; it requires alignment with the institution's strategic goals and a focus on building the digital literacy of faculty, staff, and students. Institutions must also invest in infrastructure that supports the integration of new technologies, such as reliable internet connectivity, digital libraries, and virtual learning environments.

A key aspect of technological preparedness is ensuring that faculty and staff have the necessary skills and support to effectively use technology in their teaching and administrative roles (Garrison & Vaughan, 2008). Professional development programs that focus on digital pedagogy, online course design, and the use of educational technologies are essential for equipping educators to thrive in a rapidly changing environment. Studies have shown that faculty members who receive adequate training and support are more likely to embrace new technologies and incorporate them into their teaching practices (Guri-

Rosenblit, 2009). Conversely, institutions that fail to provide adequate training may struggle to implement technological changes effectively, leading to resistance and suboptimal outcomes.

Investing in digital infrastructure is essential for preparing institutions for technological change. This includes not only physical resources such as hardware and software but also digital resources such as online databases, e-books, and collaborative platforms (Bates and Sangrà, 2011). Institutions that are well-prepared for change have robust digital ecosystems that support a wide range of academic and administrative functions. During the COVID-19 pandemic, the importance of digital infrastructure became particularly evident, as universities were forced to shift to remote learning models. Institutions with strong digital preparedness were able to transition smoothly, while those with inadequate infrastructure faced significant challenges in maintaining academic continuity (Marinoni et al, 2020).

Higher education institutions are facing unprecedented pressures to adapt to a rapidly changing world. Preparedness for change is critical for institutions to remain competitive, sustainable, and relevant. Key factors influencing preparedness include organizational flexibility, strong leadership, supportive organizational culture, and technological readiness. Institutions that foster a culture of innovation, invest in leadership development, and strategically integrate technology into their operations are better positioned to navigate the complexities of the modern educational landscape. However, change in higher education is often met with resistance, particularly in environments where traditions and norms are deeply entrenched. Overcoming these challenges requires a collaborative approach that involves all stakeholders in the change process and aligns change efforts with the institution's broader mission and goals. As the higher education sector continues to evolve, institutions that are prepared for change will be better equipped to meet the demands of the future.

Continuity is a challenge for all businesses and operations regardless of industry or sector and as growing pressure from competitors, shareholders and stakeholders increase, the need to identify where and how to integrate mechanisms to support this have become more evident (Nadiye, 2018). The ability to improve and sustain what an organisation can do is becoming more of a focussed effort that tries to balance the environmental, economic and social needs both past, current and future (Garza-Reyes, 2014). Raja et al (2017) suggest that continuous improvement (CI) applies to the ongoing improvement of goods and services, playing a crucial part for all organisations, whilst Lam et al (2015) refer to CI as a progressive journey that directly links to organisational performance.

The use of Lean Six Sigma (LSS) practices and principles have emerged and grown over time, predominantly within manufacturing and in particular the car industry. Improvement has become a focus for many organisations and the need for developing strategies to implement and maintain this approach is now more evident as competitive advantage has become one of the keys to survival. Despite the nature and size of an organisation both quality improvement and continuous improvement are being sought through strategic planning for businesses across the globe (Anthony, 2016).

The concept of Lean Six Sigma is sometimes confused with another improvement philosophy known as Agile. The two principles work in very different ways, the latter focussing on the development of methods through collaborations whilst the former seeking to change behaviour. In manufacturing terms the lean philosophy aims to achieve high levels of efficiency through the identification and elimination of waste found within a process, thus improving the flow of goods, improving productivity and quality, ultimately changing behaviour (Tortorella and Fettermann (2017) cited in Qamar and Hall (2018)). Agile refers to a set of values and principles that focus more on people, their interactions and how quickly or effectively they respond to changes within the business environment (Purvis et al, 2014). Dubey and Gunasekaran (2014) state that agile within manufacturing is approached in such a way that aims to adopt strategies for addressing the environmental uncertainties caused by economic recession, variations in the product life cycle and supplier or technology issues.

Raman and Bharadwaj (2016) examine the application of agile to the service industry and refer to the way in which the philosophy should be delivered proactively, reacting to the unanticipated needs for the service towards the customer. The authors also suggest that agile services should address the complex and volatile business environment through the ability to adapt various processes and procedures whilst utilising required combinations of the services marketing mix. The key within this philosophy would appear to be one of reaction, adaptation and flexibility.

Continuous improvement (CI) or Kaizen is a practice that drives excellence and innovation (Alvarado-Ramirez, 2017) through the challenges that business managers face in such a competitive environment (Arya and Choudhary, 2015). Continuous improvement is a philosophy that alludes to incremental changes or improvements that are derived through the careful and detailed analysis and scrutiny of an organisations practices and procedures (Ramadani and Gerguri, 2011). CI is achieved through methodologies that have evolved and been developed over a period of time and similar to that of LSS and Agile, originate from the manufacturing industry whereby competitiveness was, and still is, a key contributing factor

thus it aims to focus on all aspects of the organisation (Singh and Singh, 2015). Milner and Savage (2016) refer to organisations, including private sector ones, having to deal with turbulent and highly complex business environments that are ever-changing and economically challenging, driving the need for change to maintain and improve their position. The authors also state that remaining competitive requires the desire and determination to develop, innovate and change through improving all parts of the business.

Studies of the service industry would suggest that the adoption of theoretical approaches that have been tried and tested within the manufacturing sector can only achieve a limited effect when applying them to intangible practices and procedures (Radnor and Osborne, 2013). This thinking of CI application to an industry that has customer service at its core, is seen by Saarijarvi et al (2013) as purely theoretical whereas Vargo and Lusch (2017) have more recently argued that the practical elements of CI should be developed more for the service industry in order that more theory is fostered. With customer service being the focus, organisations are seeking to adopt and introduce initiatives that aim to improve the quality of the provision through the ideals of Total Quality Management (TQM), namely LSS, Agile and CI (Yang et al, 2014). Koval et al (2018) state that this focus has emerged from the success of these philosophies in the manufacturing industry where they have gained and continue to gain successful outcomes. The author also goes on to state that this success within the manufacturing industry is the very reason why it has gained considerable interest and acceptance in the service industry.

The techniques of Total Quality Management are used to reduce any process variation thus resulting in a consistent standard, this is also the approach of ISO implementation, identify and then reduce or eliminate the waste or non-value added activities within the process, and so improve the overall customer service (Jayanth and Xu, 2016). Whilst the adoption and implementation of TQM and its collaborative elements are supported by literature for the manufacturing industry, the service industry, as yet, is still to produce evidence that it can be fully transitioned albeit in other formats and configurations. Koval et al (2018) identify and attribute the failure of CI to the conditions for continued effectiveness and the fact that these cannot easily be highlighted. Stelson et al (2016) suggest other reasons for failure stating that this is caused by managers focussing on tools and other mechanisms for success, whereas the factors that should be of attention are those relating to human intervention through leadership and cultural changes within the workplace. Although some studies suggest a failure rate as high as 90% (Bhasin, 2008), Fuller et al (2014) explains that these failures receive less attention than required, Peltokorpi et al (2008) stating that the challenges to effective CI and the value creation that it offers stem from a number of

conflicting goals, namely poor managerial support, organisations or departments not sharing information or knowledge with each other and insufficient availability of resources (Burgess and Radnor, 2013).

2.11 Theoretical Framework

In today's rapidly evolving landscape change has become an inevitable and integral part of all organisations. The contemporary era is marked by relentless shifts in technology, globalisation, customer expectations, and market dynamics (Ahmad and Siti, 2020). As a result, change is not just common it's constant and necessary. Organisations must continuously adapt and evolve to maintain relevance, enhance their competitiveness edge and sustain their growth trajectories. For these reasons change serves as both a survival mechanism and a strategic tool for development and innovation. Change within any organisation is implemented to ensure that they remain flexible and responsive to both internal and external business pressures. Whether it involves restructuring, digital transformation, adopting new management practices, or re-engineering workflows, change initiatives are primarily driven by the desire to improve performance, productivity and overall operational efficiency (Cameron & Green, 2019). In addition to enhancing performance, change is also vital in shaping and reshaping employee behaviour, fostering a culture of innovation, and aligning organisational practices with shifting environmental conditions. According to Leana and Barry (2000) change enables organisations to remain dynamic by continuously evolving their internal structures and adapting to changes in the external environment. This dynamic nature not only ensures survival but also promotes long-term success. In essence change can influence nearly every dimension of an organisation from its strategy and structure to its people and processes.

Successful implementation of change however, is far from guaranteed, many organisations struggling to execute planned change effectively, often due to resistance from employees, poor communication, lack of leadership support, fear of having to learn something new or misalignment between the change initiative and organisational culture (Al-Haddad and Kotnour, 2015). Additionally the authors emphasise that resistance to change remains one of the most significant barriers to successful transformation, especially when employees perceive change as a threat rather than an opportunity, the Technology Acceptance Model (TAM) and other behavioural frameworks highlighting that the success of change initiatives often hinges on the perceptions and attitudes of employees. If employees do not perceive the change as useful or easy to adopt, they may resist, leading to a high likelihood of failure (Venkatesh et al, 2022) but also if employees are subjected to poorly managed change

initiatives, then a reduction in motivation can lead to them becoming totally disengaged (McMillan & Perron, 2020).

Two models that attempt to encourage positive change initiatives are the Technology Acceptance Model (TAM) and Lewins change model. The former model works on the basis that the adoption of any new technological system may not be understood or accepted by all users, consequently it becomes essential to evaluate and measure the degree to which staff have accepted and comprehended the new system, effectively achieved by analysing their behaviour as a key indicator of technology adoption and engagement (Muchran et al, 2018). Muchran continued by adding that some researchers compare three different theories of behaviour; Technology acceptance model (TAM), Theory of Reasoned Action (TRA) and theory of planned behaviour (TPB), Davis et.al (1989) stating that TAM was better at explaining the willingness to accept technology than the Theory of Reasoned Action.

The latter model has been referred to as Lewin's Three Step Model and has become the best-known and arguably the most influential approach to organisational change (Burnes, 2020). Interestingly, this model was developed with the intention of resolving social conflict instead of one that focussed on organisational change. In some ways this model could be seen as offering an even greater opportunity based on this very fact, conflict often arising through differences in opinions when faced with the challenge of having to change. Change is essential for organizations operating in dynamic and highly competitive business environments. Theories of organizational change provide frameworks for understanding how effectively organizations can adapt their strategies, processes, and structural configurations in response to evolving internal and external demands (Hussain et al, 2018). One of the most successful models in achieving this is that of Lewin's change model.

2.11.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed to be used in various studies to explain users' perceived acceptance of technology. Liu et al, (2005) found that the components of TAM could help explain users' intention to continue using technology, particularly in education. This finding was confirmed by Isaac et al, (2018), who noted that Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) influence users' intention to continue using e-learning platforms. Similarly, Purnamasari and Advensia (2014) explained that PEOU and PU could also impact users' intention to continue using e-learning. As such, TAM is especially relevant in online environments because it focuses on information system usage, specifically around the concepts of ease of use and usefulness.

The Technology Acceptance Model remains one of the most influential theoretical frameworks for explaining individual technology adoption within information systems research. Derived from the Theory of Reasoned Action (Fishbein and Ajzen, 1975) TAM suggests the two primary constructs as mentioned above (perceived usefulness and perceived ease of use) subsequently influencing behavioural intention and actual system use. Its conceptual simplicity, predictive capability and adaptability have contributed to its widespread application across sectors including education, healthcare, e-commerce and organisational information systems (Venkatesh & Davis, 2000).

Despite its popularity, TAM has been subject to sustained criticism regarding its theoretical assumptions, methodological orientation and limited explanatory power in complex organisational settings. A lot of this criticism centres on its positivist epistemological foundations which privilege quantifiable individual perceptions while neglecting broader organisational, cultural and institutional influences. As Bagozzi (2007) argues that TAM has become increasingly characterised by incremental modifications rather than substantive theoretical advancement, resulting in a sudden increase of variables without corresponding improvements in explanatory depth. Similarly Benbasat and Barki (2007) contend that continued refinement of TAM has diverted attention from more significant organisational and social issues surrounding technology implementation.

A fundamental limitation of TAM lies in its individualistic conception of technology adoption. It assumes that technology acceptance is principally determined by rational cognitive evaluations of usefulness and ease of use, thereby reducing adoption decisions to psychological processes located within individual users. Such assumptions overlook the social construction of technology and the extent to which technology use is embedded within organisational routines, professional identities and power relationships. From a sociological perspective the adoption of technologies do not depend solely on user perceptions, rather they are socially negotiated and shaped by institutional norms, organisational culture and professional practice (Leonardi, 2011).

The Social Construction of Technology (SCOT) framework developed by Bijker et al., (1987) provides a significant challenge to TAM's deterministic assumptions. SCOT argues that technological meaning emerges through interactions among relevant social groups rather than from intrinsic technological characteristics. Acceptance therefore is based on negotiation, interpretation and institutional context rather than merely perceptions of usefulness. Similarly, Actor-Network Theory (ANT) (Latour, 2005) conceptualises technology implementation as the outcome of heterogeneous networks comprising human and non-

human actors. Within this framework, technological adoption results from processes of translation, negotiation and stabilisation rather than individual behavioural intentions. Such perspectives reveal the limitations of TAM in explaining organisational technology change, particularly within complex institutions such as universities where multiple stakeholders possess competing objectives and varying degrees of influence.

The sociological critique extends further through Structuration Theory (Orlikowski, 2000) within information systems research. Orlikowski argues that technologies both shape and are shaped by organisational practices through recursive interaction. Technology use is therefore dynamic rather than static, evolving through an iterative enactment rather than discrete adoption decisions. TAM by contrast, largely conceptualises acceptance as a one-time behavioural event, inadequately capturing how technologies become institutionalised, modified and reinterpreted over time. This limitation is especially significant within Higher Education where collaborative partnership processes continually evolve through policy change, organisational learning and regulatory requirements.

Political economy perspectives provide an additional layer of critique by situating technology adoption within broader structures of power, governance and economic transformation. Technologies are not simply adopted because users perceive them to be useful, but because organisations increasingly operate within governance regimes characterised by efficiency, performance measurement and managerial accountability (Harvey, 2005). Universities have experienced significant restructuring under government policies, emphasising market competition, audit cultures and managerial control (Shore and Wright, 2015). Technology implementation within Higher Education therefore frequently reflects institutional imperatives associated with cost reduction, compliance and data-driven governance rather than voluntary user acceptance.

The pandemic further exposed limitations within TAM. During the rapid transition to online teaching in 2020, technology adoption occurred under conditions of necessity rather than voluntary acceptance. Academics frequently adopted unfamiliar digital platforms irrespective of perceived ease of use or usefulness because institutional continuity depended upon immediate implementation. This unprecedented period demonstrated that organisational context, crisis management and institutional leadership may override individual acceptance factors. Such findings align more closely with organisational change theories and socio-technical perspectives than with traditional behavioural acceptance models.

Recognising these limitations, subsequent models have attempted to extend TAM by incorporating social influence, facilitating conditions and organisational variables. The

Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003) integrates multiple acceptance theories and introduces constructs including social influence and facilitating conditions. Although UTAUT improves explanatory capability, critics argue that it largely retains the positivist and individualistic assumptions underpinning TAM while increasing conceptual complexity (Bagozzi, 2007).

Overall, TAM remains a valuable model for understanding individual perceptions of technology, particularly during the early stages of system implementation. However, its continued dominance within information systems research risks oversimplifying the multidimensional nature of organisational technology adoption. Sociological perspectives demonstrate that technology acceptance is socially constructed, institutionally embedded and continually negotiated, while political economy critiques reveal how technologies are implicated in broader systems of managerial control, governance and economic restructuring.

2.11.2 The Five Core Constructs of TAM

TAM comprises five primary constructs, each playing a critical role in shaping user behaviour:

1. *Perceived Ease of Use (PEU):*

This refers to how effortlessly a user believes it will be to interact with a system. PEU is essential because if a system is difficult to learn or use, it is less likely to be adopted, regardless of its potential benefits (Davis, 1989). Research shows that intuitive user interfaces and well-designed tutorials can significantly improve PEU, thereby increasing user acceptance (Alalwan et al., 2018).

2. *Perceived Usefulness (PU):*

PU is defined as the extent to which an individual believes that using the system will improve their job performance. A system perceived as beneficial is more likely to be adopted. This belief is often shaped by past experience, peer influence, and organisational support. In the workplace systems that contribute to task efficiency, accuracy, or speed are typically rated high on usefulness (Venkatesh et al., 2003).

3. *Attitude Toward Use (AT):*

Attitude refers to an individual's overall affective response, positive or negative, toward using the technology. While some later models like TAM2 argue that attitude

is not always necessary to predict behaviour, it remains a valuable measure for understanding user sentiment in initial adoption phases (Salloum et al., 2019).

4. *Behavioural Intention to Use (BI)*:

BI reflects the user's motivation or intent to engage with the system in the near future. This is often considered a strong predictor of actual usage. According to Fishbein and Ajzen's Theory of Reasoned Action cited in Al-Suqri and Al-Kharusi (2015), intentions are the most immediate predictors of behaviour. Therefore, increasing BI is a key goal in change management efforts focused on technology implementation.

5. *Actual System Use (AU)*:

This construct represents the real-world use of the system. Actual use is typically measured through system logs or self-reported data validating whether the earlier constructs successfully translated into practice. A system is likely to see sustained usage if it aligns with both ease and usefulness perceptions and integrates well with users' workflows (Holden & Karsh, 2010).

2.11.3 TAM and Change Management

TAM has significant implications for organisational change management especially in initiatives that involve technology implementation or digital transformation. Through understanding the determinants of technology acceptance, change agents or leaders can design interventions that reduce resistance and improve adoption.

- *Training and Support*: Enhancing PEU through user training, help desks, and user-friendly interfaces can lead to increased acceptance. A study by Al-Samarraie et al. (2020) shows that interactive training improves both PEU and PU, ultimately raising user satisfaction.
- *Clear Communication of Benefits*: Communicating how a system will benefit users in their daily tasks enhances PU. Highlighting real use cases and performance gains can build a compelling case for adoption (Dwivedi et al, 2019).
- *User Involvement in Development*: Engaging users early in the system design and feedback process can improve both PEU and PU. This participative approach also boosts attitude and intention to use, increasing the chances of successful implementation (Shao et al, 2021).

- *Monitoring and Evaluation:* Tracking system usage post-implementation helps organizations understand how TAM constructs play out in practice. This can lead to targeted interventions to address barriers or improve system usability.

The Technology Acceptance Model remains a powerful tool for understanding how individuals engage with new technologies. Its emphasis on perceived usefulness, ease of use, and behavioral intention provides a practical framework for guiding change management efforts. As organizations continue to undergo digital transformations, applying TAM can help ensure that the human side of change is adequately addressed—leading to higher acceptance, better system utilization, and ultimately, more successful outcomes (Natasia et al, 2022).

2.11.4 Application of TAM in Change Management

In change management, particularly when introducing new technologies such as systems into HE institutions and collaborative partnerships, TAM provides a valuable lens for anticipating how employees might react. If users believe that the new system is **useful** and **easy to use**, they are more likely to adopt it without resistance.

Enhancing Communication and Training

TAM highlights the importance of clear communication and adequate training. If employees do not understand the benefits of the new technology (low perceived usefulness), or if they feel unprepared to use it (low perceived ease of use), resistance is likely. Change managers can use TAM principles to shape communication strategies that emphasize practical benefits and provide user-friendly training that reduces complexity.

Reducing Resistance to Change

Resistance to change often stems from uncertainty and fear. TAM helps reduce this by addressing psychological barriers. For example, if a new digital tool is introduced, leaders can focus on how it will save time, improve productivity, or reduce repetitive tasks. This shifts the focus from what employees are losing to what they are gaining, thereby improving attitudes toward the change.

Supporting User Involvement

Involving end users in the design, selection, or pilot testing of new technology can enhance both perceived usefulness and ease of use. Their feedback can be used to make systems more intuitive and relevant to their work, thereby increasing acceptance. This approach aligns with participative change management principles and reinforces commitment to the change.

Informing Leadership and Change Strategies

TAM also helps guide leadership behaviour during change initiatives. Leaders can act as role models by using the technology themselves, demonstrating both its ease of use and its usefulness. This visible commitment can have a powerful influence on adoption behaviours within the organization. According to Idogawa (2023), a structured method for planning, implementing, and monitoring change initiatives is known as change management. It provides the framework and procedures for assisting individuals, teams, and organisations in achieving their desired future state.

The Technology Acceptance Model plays a critical role in shaping effective change management strategies especially in tech-driven change initiatives. By focusing on employees' perceptions of usefulness and ease of use, change leaders can reduce resistance, improve user engagement, and increase the likelihood of successful technology implementation. Integrating TAM into change planning ensures that the human side of technology adoption is not overlooked.

2.11.5 Lewin's Change Model

Kurt Lewin's Change Model is a widely recognized framework for understanding and managing organisational change. Introduced in the 1940s by psychologist Kurt Lewin, the model breaks down the process of change into three core stages: Unfreezing, Changing, and Refreezing (Burnes, 2020). Though simple in structure, the model offers profound insights into the human and organisational aspects of change, emphasizing the importance of psychological readiness and cultural alignment. Lewin introduced the concept of "planned change" to differentiate deliberate, structured change efforts from those that occur spontaneously, accidentally, or are externally imposed upon an organization. Planned change involves a collaborative process in which organizational leaders, employees, and change specialists or agents collectively assess challenges, design targeted interventions, and implement specific strategies aimed at enhancing organizational effectiveness (Conklin, 2021).

Despite its apparent simplicity, the model has significantly influenced contemporary change management theory and continues to underpin numerous planned organisational change methodologies, including aspects of Lean implementation, quality improvement and organisational development (Burnes, 2004). Lewin argued that organisations exist in a state of quasi-stationary equilibrium in which driving forces promoting change are balanced by restraining forces resisting it. Successful organisational change therefore requires destabilising existing attitudes and routines during the unfreezing stage before introducing new behaviours and finally reinforcing these behaviours through refreezing (Lewin, 1947). Central to this model is Lewin's Force Field Analysis, which identifies the competing social, organisational and psychological forces influencing change outcomes. Unlike many subsequent behavioural models, Lewin acknowledged that organisational change is fundamentally social, requiring participation, communication and stakeholder engagement rather than purely managerial direction.

The enduring appeal of Lewin's model lies in its conceptual clarity and practical applicability. The framework provides managers with a structured approach to planning organisational change while recognising that employee resistance frequently arises from uncertainty rather than opposition itself. Burnes (2004) argues that many contemporary criticisms misunderstand Lewin's original work, which was considerably more sophisticated than the simplified three-stage representation commonly presented in management literature. Lewin's wider programme of research emphasised group dynamics, participatory decision-making, organisational learning and action research, positioning change as an iterative social process rather than a mechanistic sequence of managerial interventions.

Nevertheless, the model has attracted extensive criticism, particularly regarding its assumptions of organisational stability and linearity. Dawson (2003) argues that Lewin developed his framework during a period characterised by relatively stable organisational environments, whereas contemporary organisations operate within conditions of continual uncertainty, technological disruption and global competition. The notion of "refreezing" has proven especially contentious because it implies that organisations can establish relatively permanent states of equilibrium following change. In contrast, many organisations now experience continuous adaptation in response to evolving technological, economic and regulatory conditions, making stable end states increasingly unrealistic (Weick & Quinn, 1999).

From an organisational perspective, the concept of refreezing appears particularly problematic within Higher Education. Universities increasingly operate within environments

characterised by policy reform, digital transformation, internationalisation, widening participation agendas and changing funding mechanisms. Organisational processes therefore require ongoing refinement rather than permanent stabilisation. Continuous improvement philosophies such as Lean and Kaizen similarly reject the notion that processes should remain static once improved. Instead, Kaizen promotes perpetual incremental improvement, suggesting that organisational learning is continuous rather than episodic (Imai, 1986). Consequently, Lewin's final stage appears incompatible with Lean philosophy, where organisational routines are continually challenged to eliminate waste and enhance value creation.

Methodological critiques further question the empirical foundations of the model. Much of the evidence supporting Lewin's framework derives from organisational case studies and practitioner accounts rather than systematic longitudinal research. Dawson (2003) argues that organisational change rarely follows predetermined sequential stages but instead evolves through complex interactions between organisational actors, environmental conditions and emergent opportunities. Consequently, contemporary processual theories conceptualise change as dynamic, iterative and socially negotiated rather than planned and sequential.

Sociological perspectives provide further challenges to Lewin's framework by questioning its underlying assumptions concerning organisational consensus. Giddens (1984) argues that organisational structures are continuously produced and reproduced through everyday social practices. Change therefore emerges through recursive interactions between organisational actors and institutional structures rather than discrete episodes of unfreezing and refreezing. Technologies organisational routines and institutional norms continually shape one another, producing ongoing adaptation rather than sequential change events.

Similarly, Actor-Network Theory (Latour, 2005) rejects the notion that organisational change can be understood solely through human behaviour or managerial intervention. Instead, organisational outcomes emerge from networks comprising human actors, technologies, documents, regulations, organisational routines and material artefacts. Change occurs through processes of negotiation, enrolment and translation across these heterogeneous networks rather than through planned managerial stages. Such perspectives are particularly relevant within Higher Education collaborative partnerships, where successful information exchange depends upon interactions between universities, partner institutions, quality assurance frameworks, digital platforms and regulatory bodies.

Nevertheless, Lewin's work retains significant value for this research. The concept of unfreezing provides a useful explanation of how organisations develop readiness for change by challenging established assumptions and recognising existing inefficiencies. Similarly, Lewin's emphasis upon stakeholder participation and group dynamics resonates strongly with Lean principles of employee engagement and collaborative problem-solving. However, the concept of refreezing requires substantial reinterpretation within contemporary Higher Education. Rather than representing a permanent organisational end state, process standardisation should be understood as a temporary stabilisation that remains open to continuous evaluation and incremental improvement through Kaizen.

Accordingly, Lewin's model is best viewed within this thesis as a foundational theory of planned organisational change rather than a comprehensive explanation of contemporary organisational transformation. While its emphasis upon readiness, participation and behavioural change provides valuable insights, the findings of this research suggest that sustainable improvements in collaborative partnership information exchange emerge through continuous organisational learning, socio-technical adaptation and Lean process improvement operating within complex institutional and political environments.

Unfreezing

The *Unfreezing* stage is about preparing individuals and organizations to accept that change is necessary. This involves breaking down the existing status quo, challenging current beliefs, and creating awareness about why change is essential. According to Burnes and Bargal (2017), this phase is critical because most people are naturally resistant to change and tend to maintain familiar routines unless sufficiently motivated. To unfreeze existing behaviours, leaders must present compelling evidence or arguments showing that the current state is no longer effective or sustainable. Communication plays a vital role here, along with strong leadership support to reduce uncertainty and build trust. Without successful unfreezing, any change initiative is likely to face resistance and ultimately fail (Cummings et al, 2016).

Changing (or Transitioning)

Once the current process or system has been destabilised, the organization then enters the *Changing* stage. This is when the actual transformation occurs, new processes, structures, behaviours, or ways of thinking are introduced. It is often a period of learning, exploration, and adaptation. During this phase, employees may feel confused or unsure, making support mechanisms like coaching, training, and open communication crucial. As pointed out by

Hussain et al. (2018), successful navigation of the transition stage requires leadership that guides individuals through uncertainty while providing the tools and knowledge to adapt. The change should align with strategic goals and be reinforced by continuous engagement, feedback, and involvement from employees to foster ownership and commitment.

Refreezing

The final stage, *Refreezing*, is about stabilizing the organization at the new equilibrium. It involves embedding new behaviours, processes, or values into the organizational culture so that they become the new normal. This could mean adjusting policies, updating job roles, or institutionalizing performance metrics aligned with the new direction. Without this step, organizations risk reverting to old habits over time. As noted by Cameron and Green (2019), refreezing ensures that change is sustained and reinforced through long-term strategic alignment and cultural integration. While some critics argue that the model oversimplifies the complex nature of change, particularly in today's fast-moving environments (Burnes, 2020) many still find its structure useful as a foundational tool for initiating and managing change, particularly in environments where incremental, step-by-step change is required.

Lewin's Change Model remains a cornerstone in change management theory due to its clarity and focus on both psychological and organizational transformation. By guiding organizations through unfreezing, changing, and refreezing, it helps leaders systematically manage the human side of change, ensuring a smoother and more sustainable transformation process. According Walk (2022) moving from the organization's current state to a desired future state requires more than a singular action, it is a gradual and interconnected process. Fry (2021) further elaborated on the practical implementation of change by identifying three critical activities: activity planning, commitment planning, and establishing change management structures. Activity planning involving developing a strategic roadmap for the change initiative, outlining a sequence of events and specific actions that must be carried out to ensure successful transformation. These actions are designed to be time bound and aligned with the organization's overarching priorities and objectives for change.

Commitment planning on the other hand, focuses on identifying key individuals and groups whose involvement and support are essential for the success of the change process, this could include change agents. This also includes assessing senior level support, stakeholder interests, and generating engagement to secure the necessary commitment to facilitate and sustain change.

The third component is change management structures and refers to the establishment of frameworks and mechanisms that provide clarity and direction throughout the whole change journey. This includes the allocation of resources, leadership responsibilities and the engagement of change agents (Etareri, 2022). Similarly Bird (2021) outlined three essential elements that support the change process: information, resources, and support. The information component involving technical expertise and relevant knowledge. The resource dimension including human capital, materials, and financial investment, whilst support refers to legal validation, internal backing, and formal endorsements, all of which contribute to a stable environment conducive to successful change.

2.12 Conceptual Framework

As previously referred to in section 2.8 the education sector overall has fallen behind in terms of applying continuous improvement. O'Reilly et al (2018) suggests that the interest in this philosophy has now grown with an increasing number of higher education institutions becoming more actively involved in its potential benefits and that a more systematic approach is required if the HE environment is to fully embrace this philosophy. O'Reilly also suggested building an appropriate conceptual and guiding framework. In support of this suggestion by O'Reilly, Anthony et al (2012) identified a set of critical success factors (CSF's) that would aid the implementation of lean, whilst Albliwi et al (2014) offered a set of key readiness factors that would also support this initiative. This section offers a conceptual framework that incorporates the consolidation of these elements.

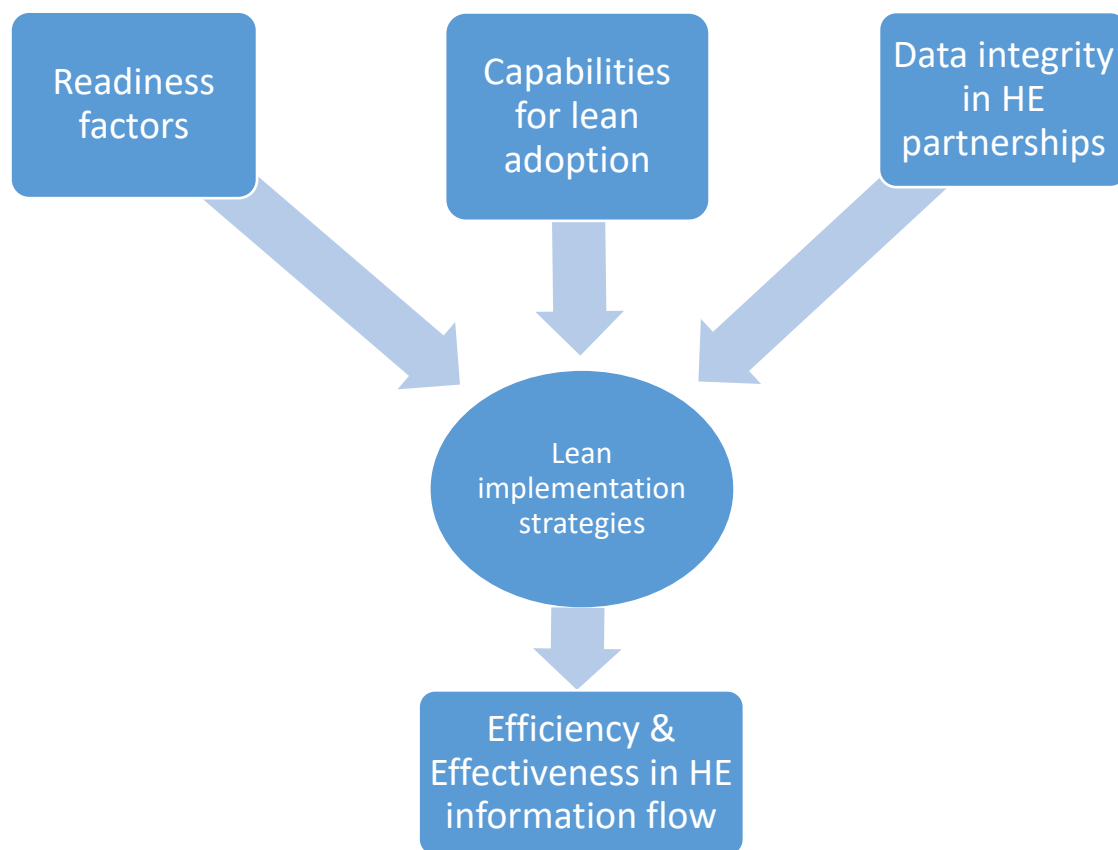


Fig 1 Conceptual Framework for the adoption of Lean practices in HE partnerships

This conceptual framework for adapting Lean practices in Higher Education (HE) partnerships provides a structured approach to assessing the feasibility and impact of Lean implementation in improving information flow processes. It integrates theories from Lean thinking, Change Readiness, and Information Management to explore key factors such as institutional readiness, technological capabilities, and governance structures. The framework emphasises the role of waste reduction, efficiency enhancement, and continuous improvement while addressing challenges related to data integrity and collaborative partnerships. Linking these elements establishes a theoretical foundation for understanding how Lean principles can be effectively integrated into HE institutions to optimise administrative processes and enhance operational efficiency.

This framework serves as a guide for data collection and analysis, mainly through thematic categorisation supported by NVivo, ensuring consistency in identifying key constructs. Readiness factors, institutional capabilities, and data integrity are identified as critical independent variables influencing Lean implementation strategies, which ultimately affect efficiency in HE information flow. The interconnected relationships between these constructs

provide valuable insights into how HE institutions can adopt Lean methodologies to streamline operations, improve collaboration, and enhance decision-making.

2.12.1 Readiness Factors

Readiness for any type of change is a construct that would be difficult to quantify and even more difficult to show or demonstrate. Organisational readiness for change is more about willingness, motivation, determination and desire that operates on multiple levels, with readiness varying across individual, group, unit, department, or organisational tiers (Weiner (2020). It can be theorised, assessed, and analysed at each of these levels. However, it is important to note that organisational readiness for change is not a uniform construct across these different levels. Its meaning, measurement, and interactions with other variables differ depending on the level of analysis. As mentioned in 2.11.2, Lewin's change model also refers to the readiness factor, emphasizing the importance of psychological readiness and cultural alignment but also alluding the concept of "planned change" in order to differentiate deliberate, structured change efforts from those that occur spontaneously, accidentally, or are externally imposed upon an organization.

In addition to being a multi-level construct, organisational readiness for change is also multi-dimensional. More specifically, it refers to the collective commitment and belief in the ability to carry out organisational change. This definition aligns with the common understanding of "readiness" in everyday language, which implies a state of psychological and behavioural preparedness to act, being both willing and able to act (Sweeny and Whitaker, 1994). Commitment to change involves a shared determination among organisational members to follow through with the necessary actions for change implementation. The importance of shared resolve is emphasised, as complex organisational changes often require the collective effort of many individuals, each person contributing to the overall implementation process. Challenges can arise when some people are committed to the change while others are not. Herscovitch and Meyer (2002) argue that organisational staff may commit to a change for different reasons; because they want to (they see value in the change), because they have to (they feel they have no choice), or because they ought to (they feel obligated). Genuine commitment driven by "want to" motives represents the highest level of dedication to organisational change implementation.

Change readiness of employees is a familiar notion about how organisations can enhance their chances for success from an organisational change initiative. At the core of readiness themes is the formation of beliefs within change participants that drive a willingness to

positively engage with change. Caldwell (2013) identifies four issues concerning change itself that may provide substitutes for readiness strategies, make readiness not necessary or necessary but not sufficient. The four issues identified by Caldwell are attributions for change, the scope and initiation of change, specific change management within the context of leadership practices, and individual differences that may make a focus on readiness less necessary. Caldwell went on to suggest that what is most important for employees to understand is that it is not an organisational change but rather a changing organisation.

During that last three decades interest in change readiness has significantly increased amongst scholars and practitioners of organisational change. Armenakis and Harris (2009) provided a comprehensive commentary on contemporary change readiness strategies, reflecting both practical applications and academic inquiry. Their work highlights how readiness strategies have contributed positively to planned change initiatives, illustrating their potential effectiveness in fostering successful transformations (Armenakis & Harris, 2009). However, while many studies celebrate the efficacy of change readiness frameworks, there has been comparatively little examination of their limitations, particularly concerning implementation challenges that may hinder their effectiveness. Despite substantial research into optimal change management practices, successful implementation remains elusive for many organisations (Keller & Price, 2011; Meaney & Pung, 2008; Burke & Litwin, 1992).

Change readiness is a multifaceted concept that encompasses various levels of analysis. At the macro-level researchers have explored structural forces opposing readiness, such as the organisational preference for consistency and predictability (Hannan & Freeman, 1984). Additionally, organisational development efforts, primarily viewed through a human resource management lens, aim to cultivate adaptive policies, collaborative cultures, and core competencies that support innovation and responsiveness to external challenges (Porras & Robertson, 1992; Cummings & Worley, 2015). Leadership has also been emphasised as a critical factor in guiding organisations through transformational change (Kotter, 1996; Bass & Riggio, 2006). While many of these perspectives focus on organisational structures or leadership behaviours, the model presented by Armenakis and Harris (2009) prioritises the employee's perspective. Their approach centres on understanding what factors influence employees' willingness to embrace and support change initiatives. This employee-centric model aligns with theories of self-initiated change (Segan et al, 2006) but primarily addresses organization-driven efforts where employee buy-in is essential (Caldwell, 2006).

Armenakis and Harris (2009) acknowledge that existing change readiness frameworks may be limited by their focus on isolated episodic changes. In contrast, the contemporary

organisational landscape often involves managing multiple overlapping changes, each with its own demands and complexities (Van de Ven & Sun, 2011). For instance, employees face formal, planned change initiatives alongside spontaneous, reactive adjustments to a continuously evolving environment. Such changes can include modifications in employee benefits, shifts in leadership, outsourcing decisions, and adjustments to strategic objectives, all of which require responses beyond typical readiness models (Herold et al, 2007).

Furthermore, change readiness models often emphasise the unfreezing stage of change outlined by Lewin (1951), where leaders attempt to cultivate willingness and motivation among employees as a precursor to implementing and sustaining change. However, Herold and Fedor (2008) argue that the change implementation process is highly contingent, shaped by the nature of the change, leadership dynamics, and various internal and external factors. Such complexity requires a broader, more nuanced approach to understanding readiness beyond the traditional frameworks proposed by Armenakis and Harris (2009). To expand the theoretical and practical scope of change readiness models, this article identifies four critical areas requiring further exploration:

1. **Role Attribution and Employee Response:** The influence of attribution judgments on how employees perceive and react to change remains underexplored. Understanding these perceptions is crucial for designing effective change readiness strategies.
2. **Change Cascading and Drivers of Change:** Building on Burke and Litwin's (1992) model of cascading change and Van de Ven and Poole's (1995) four theories of change drivers, this study seeks to clarify how various levels and origins of change interact with readiness strategies.
3. **Leadership Influence:** Leadership, as a broad behavioral construct, plays a significant role in shaping the context for change. Effective leadership must account for both promoting readiness and addressing resistance within a complex organizational environment (Bass & Riggio, 2006).
4. **Individual Characteristics:** Variability in individual readiness, influenced by personality traits, past experiences, and psychological resilience, may alter the applicability of readiness models to diverse employee populations.

Understanding these aspects can enhance our ability to design readiness strategies that are both flexible and responsive to the multifaceted realities of organizational change. As such, future research must continue to expand upon existing models, challenging their assumptions and broadening their scope to accommodate the complexity of change processes within organizations.

2.12.2 Critical Success Factors

Kowang et al. (2019) outlined five key success factors essential for the effective implementation of Lean Six Sigma (LSS). LSS incorporates both the elements of lean, whereby processes are examined with the aim of eliminating waste, Six Sigma then taking this a step further to reduce variation in processes, ultimately achieving consistency and maintaining quality. These factors include cultivating a culture of continuous improvement, promoting innovation, adopting a top-down management strategy, ensuring that employees have sufficient LSS knowledge and enhancing communication within the whole organisation. Additionally other studies emphasise other critical elements for successful LSS implementation, Papic et al. (2017) underlined the importance of organisational performance whilst Murmura et al. (2021) focused on employee involvement, empowerment, and comprehensive training. Lee and Choi (2006) highlighted the significance of systematic information storage and processing by recognising these success factors with which organisations can then increase the likelihood of effectively integrating the LSS principles.

In a study conducted in 2021, Patel and Patel identified eleven success factors that can serve as essential guidelines for organisations tasked with implementing LSS. These factors include providing adequate training and education, ensuring senior management's commitment and active involvement, fostering cultural change, developing project management skills, aligning LSS with business strategies, adopting effective communication, linking LSS practices to customer needs, promoting effective leadership, strengthening organisational infrastructure, establishing reward and recognition systems and expanding LSS practices to the supply chain and suppliers. These elements play a vital role in ensuring that LSS principles are successfully applied within any organisation (Patel & Patel, 2021). To build on this, it's important to examine how the successful implementation of Lean Six Sigma (LSS) principles can lead to sustainable improvements in organizational performance. One of the primary goals of LSS is to eliminate inefficiencies and reduce waste, ultimately resulting in enhanced customer satisfaction, reduced costs, and improved processes. Achieving these outcomes requires a systematic approach to organizational transformation, focusing on not only operational processes but also the people within the organization.

As Kowang et al. (2019) suggest, fostering a culture of continuous improvement is fundamental to LSS success. This mindset encourages all employees, from top management to frontline workers, to engage in ongoing efforts to identify and address inefficiencies. Continuous improvement is a hallmark of Lean practices, where small, incremental changes are prioritized over large, disruptive shifts. In such an environment, every employee is empowered to contribute to process improvements, and their

contributions are recognized and valued, fostering a sense of ownership and engagement in the organization's success. In addition to a focus on continuous improvement, the role of leadership in LSS implementation cannot be overstated. Patel and Patel (2021) emphasize the importance of top management commitment, which is critical for setting the tone of the entire organization. When leaders demonstrate a commitment to LSS principles, it signals to employees that LSS is not just a passing trend but a long-term strategy. This leadership commitment should be visible in actions such as allocating resources to training and development and actively supporting LSS projects. Furthermore, leadership should ensure that LSS is integrated into the broader business strategy, aligning the efforts with organizational goals to maximize impact.

Employee involvement is another crucial factor in successful LSS deployment. As noted by Murmura et al. (2021), empowering employees to make decisions and participate in problem-solving fosters a culture of innovation and accountability. Through proper training and skill development, employees gain the expertise necessary to actively contribute to LSS initiatives. When employees feel empowered and are given the tools to succeed, they are more likely to engage in the process and contribute to achieving the desired outcomes. This involvement not only enhances individual performance but also drives collective success within the organization. Equally important is the effective communication and information sharing within an organization. Lee and Choi (2006) point out that having a structured approach to storing and processing information is essential for supporting LSS efforts. Data-driven decision-making is a cornerstone of LSS, and access to accurate and timely information is critical for making informed choices. Moreover, transparent communication channels ensure that all stakeholders are aligned with the objectives and progress of LSS projects, helping to avoid misunderstandings or resistance.

To ensure that LSS principles are deeply embedded within an organisation, Patel and Patel (2021) recommended creating an infrastructure that supports the initiative at every level. This includes developing project management skills to drive LSS projects effectively and establishing reward and recognition systems to incentivise successful LSS practices. Linking LSS to customer needs ensures that improvements directly address what matters most to the organization's clients, leading to enhanced customer satisfaction and loyalty. Expanding LSS practices beyond the organisation to include suppliers and the supply chain can amplify the benefits of Lean Six Sigma by ensuring that suppliers also adhere to LSS principles an organisation can create a more efficient and responsive supply chain, reducing costs, improving quality, and enhancing collaboration across the entire value stream. Successfully implementing Lean Six Sigma requires a multifaceted approach that combines leadership

commitment, employee involvement, effective communication, and systematic infrastructure development. By addressing these critical success factors, organisations can unlock the full potential of LSS, driving long-term improvements in quality, efficiency, and customer satisfaction.

2.12.3 Capabilities for lean adoption

Adopting lean principles within an organisation necessitates a multifaceted approach that encompasses strategic planning, cultural transformation, and the development of specific capabilities. Lean management, initially originating from the Toyota Production System, emphasises the elimination of waste, continuous improvement, and the delivery of value to customers. While lean principles originated in manufacturing, their applicability has extended to various sectors including healthcare, information technology and services. The adoption of lean methodologies involves a significant transformation in organizational culture, processes and employee engagement. The essential capabilities for lean adoption are:

Leadership and Top Management Commitment

Effective leadership is paramount in steering the organisation through the lean transformation journey. Leaders must not only endorse lean principles but also actively participate in their implementation. Their commitment sets the tone for the organization, influencing employee attitudes and the overall success of lean initiatives. Studies have shown that leadership involvement is a critical determinant of lean implementation success.

Organizational Culture and Change Readiness

A culture that embraces change, continuous improvement and employee involvement is conducive to lean adoption. Organizations must assess their readiness for change, identifying potential resistance and developing strategies to address it. Factors such as open communication, trust, and a shared vision contribute to a culture supportive of lean principles.

Employee Engagement and Empowerment

Lean implementation relies heavily on the active participation of employees at all levels. Empowering employees to identify inefficiencies and contribute to process improvements fosters a sense of ownership and accountability. Training and development programs are essential to equip employees with the necessary skills and knowledge to participate effectively in lean initiatives.

Communication and Information Sharing

Transparent and effective communication channels are vital for disseminating information about lean objectives, progress, and outcomes. Regular updates and feedback mechanisms ensure that all stakeholders are informed and engaged. Effective communication also facilitates the sharing of best practices and lessons learned across the organisation.

Process Management and Continuous Improvement

A core component of lean is the continuous assessment and improvement of organizational processes. Implementing tools such as value stream mapping and root cause analysis enables organizations to identify inefficiencies and develop targeted solutions. Establishing a culture of continuous improvement ensures that lean principles are sustained over time.

Performance Measurement and Feedback Systems

Developing metrics to evaluate the effectiveness of lean initiatives is crucial. Performance measurement systems should align with organizational goals and provide actionable insights. Regular feedback allows for the adjustment of strategies and reinforces a culture of accountability and continuous improvement.

Technological Support and Infrastructure

The integration of appropriate technologies can enhance the efficiency and effectiveness of lean processes. Information systems that facilitate data collection, analysis, and reporting support informed decision-making. Investing in technology infrastructure ensures that lean initiatives are scalable and adaptable to changing organizational needs.

The challenges in lean adoption

Despite the benefits of lean methodologies, organisations may encounter challenges during adoption. Common obstacles include resistance to change, lack of management support, inadequate training, and misalignment between lean initiatives and organizational objectives. Addressing these challenges requires a proactive approach, including stakeholder engagement, clear communication of benefits, and the development of a supportive organizational culture. Successful lean adoption is contingent upon the development and integration of specific organisational capabilities. Leadership commitment, a supportive culture, employee engagement, effective communication, robust process management, performance measurement and technological infrastructure are all critical components. In

fostering these capabilities, organisations can navigate the complexities of lean implementation and achieve sustained improvements in efficiency and effectiveness.

2.12.4 Data integrity in Higher Education partnerships

In the contemporary landscape of higher education partnerships between private and public educational institutions have become increasingly prevalent. These collaborations ranging from research initiatives to shared academic programs necessitating the exchange and management of vast amounts of data. Ensuring data integrity within these partnerships is paramount as it underpins the reliability of shared information, compliance with regulatory standards and the overall success of collaborative endeavours.

Understanding Data Integrity

Data integrity refers to the accuracy, consistency and reliability of data throughout its lifecycle. In the context of higher education partnerships, it ensures that information exchanged between institutions remains unaltered and trustworthy. Maintaining data integrity is crucial for informed decision-making, preserving institutional reputations, and upholding the quality of academic and administrative processes.

Challenges to Data Integrity in Partnerships

Higher education institutions often employ varied data management systems leading to inconsistencies in data formats and standards. When partnering institutions attempt to integrate their systems, discrepancies can arise, compromising data integrity. An example of this would be the differences in student information systems that could result in mismatched records, affecting student mobility and joint program administration.

Data silos occur when information is isolated within departments or institutions, hindering comprehensive data analysis and sharing. In partnerships silos can prevent the seamless exchange of information, leading to redundant data collection and potential errors.

Addressing data silos requires a concerted effort to promote interdepartmental and inter-institutional communication and data sharing protocols.

Collaborative partnerships must navigate a complex web of data protection regulations such as the General Data Protection Regulation (GDPR) in the European Union and the Family Educational Rights and Privacy Act (FERPA) in the United States. Ensuring compliance

across different legal frameworks poses a significant challenge, necessitating robust data governance structures and mutual understanding of regulatory obligations.

The increasing digitization of academic processes exposes institutions to cybersecurity risks. Data breaches can compromise sensitive information, eroding trust between partners and stakeholders. Implementing advanced security measures and fostering a culture of cybersecurity awareness are essential to safeguarding data integrity.

Implications of Compromised Data Integrity

The repercussions of compromised data integrity in higher education partnerships are multifaceted:

- **Academic Consequences:** Inaccurate data can affect student records, research outcomes, and accreditation processes, undermining the credibility of academic programs.
- **Operational Inefficiencies:** Erroneous data can lead to misinformed decisions, resource misallocation, and administrative bottlenecks.
- **Legal and Financial Repercussions:** Non-compliance with data protection regulations can result in legal penalties and financial losses.
- **Erosion of Trust:** Stakeholders, including students, faculty, and external partners, may lose confidence in institutions that fail to maintain data integrity, jeopardizing future collaborations.

Strategies for ensuring data integrity

Developing and adhering to common data standards across partnering institutions facilitates seamless data integration and reduces inconsistencies. Standardisation encompasses data formats, definitions, and protocols, ensuring that all parties interpret and utilise data uniformly. A comprehensive data governance framework delineates roles, responsibilities, and procedures for data management. It encompasses policies on data quality, security, access, and compliance, providing a structured approach to maintaining data integrity. Advanced data management systems and analytics tools can automate data validation, detect anomalies, and facilitate real-time monitoring. Investing in interoperable technologies enhances data accuracy and supports informed decision-making within partnerships.

Periodic audits assess the effectiveness of data management practices, identify vulnerabilities, and ensure adherence to established standards. Continuous monitoring enables prompt detection and rectification of data integrity issues. Educating staff and stakeholders on data management best practices fosters a culture of accountability and

vigilance. Regular training sessions and workshops can enhance data literacy and empower individuals to uphold data integrity in their respective roles.

Case Studies and Best Practices

Several higher education partnerships have exemplified effective data integrity management:

- The European University Alliance: This consortium of European universities has implemented a unified data governance model, facilitating seamless student mobility and joint research initiatives.
- The University of California System: By adopting centralized data management platforms and standardized protocols, the UC system ensures consistent data practices across its campuses, enhancing collaboration and operational efficiency.

Data integrity stands as a cornerstone of successful higher education partnerships. As institutions increasingly collaborate to advance academic and research objectives, the imperative to maintain accurate, consistent, and secure data becomes ever more critical. By recognizing the challenges, understanding the implications, and implementing strategic measures, higher education institutions can uphold data integrity, fostering trust, compliance, and excellence in their collaborative endeavors.

2.12.5 Lean implementation strategies

Implementing Lean strategies within organisations necessitates a comprehensive understanding of its principles, tools and the challenges that may arise during the process. Lean methodology rooted in the Toyota Production System emphasises waste reduction, continuous improvement, and delivering value to customers.

Understanding Lean Principles

At its core, lean focuses on maximising customer value while minimising waste. Womack and Jones (2003) delineate five fundamental principles:

1. Value: Define value from the customer's perspective.
2. Value Stream: Identify all steps in the value stream and eliminate those that do not create value.
3. Flow: Ensure that value-creating steps occur in a tight sequence.
4. Pull: Let customers pull value from the next upstream activity.

5. Perfection: Strive for perfection by continually removing successive layers of waste.

These principles serve as the foundation for lean implementation, guiding organisations toward operational excellence.

Strategic Approaches to Lean Implementation

Value Stream Mapping (VSM)

VSM is a pivotal tool in Lean implementation, enabling organizations to visualise and analyze the flow of materials and information required to bring a product or service to the customer. By identifying bottlenecks and non-value-adding activities, organizations can streamline processes effectively (Rother & Shook, 2003).

5S Methodology

The 5S methodology—Sort, Set in order, Shine, Standardize, and Sustain—promotes workplace organization and standardization. Implementing 5S can lead to improved efficiency, reduced waste, and enhanced safety (Hirano, 1995).

Just-In-Time (JIT) Production

JIT aims to produce only what is needed, when it is needed, and in the amount needed. This approach reduces inventory costs and enhances responsiveness to customer demand (Ohno, 1988).

Kaizen (Continuous Improvement)

Kaizen fosters a culture of continuous, incremental improvements involving all employees. Regularly implementing small changes can lead to significant enhancements over time (Imai, 1986).

Standardized Work

Establishing standardized procedures ensures consistency, reduces variability, and provides a baseline for future improvements. Standardized work is essential for maintaining quality and efficiency (Liker, 2004).

Organizational Culture and Leadership

Successful Lean implementation transcends tools and techniques; it requires a cultural transformation. Leadership commitment is paramount. Leaders must embody Lean

principles, fostering an environment where continuous improvement is valued and employees are empowered to identify and solve problems (Liker & Meier, 2006). Moreover, organizations should cultivate a culture of respect and collaboration. Engaging employees at all levels encourages ownership and facilitates the identification of improvement opportunities (Emiliani, 2006).

Challenges in Lean Implementation

Despite its benefits, Lean implementation presents challenges:

- **Resistance to Change:** Employees may be apprehensive about altering established routines.
- **Insufficient Training:** Lack of understanding of Lean principles can hinder effective implementation.
- **Inadequate Leadership Support:** Without strong leadership, Lean initiatives may lose momentum.
- **Misalignment with Organizational Goals:** Lean efforts must align with the broader strategic objectives to be sustainable.

Addressing these challenges requires comprehensive change management strategies, including clear communication, ongoing training, and aligning Lean initiatives with organizational goals (Kotter, 1996).

Case Studies and Empirical Evidence

Empirical studies underscore the efficacy of Lean implementation:

- In the manufacturing sector, a study by Shah and Ward (2007) found that Lean practices significantly improved operational performance.
- In healthcare, applying Lean principles led to reduced patient wait times and improved service quality (Kim et al., 2006).
- In higher education, Lean initiatives enhanced administrative processes and resource utilization (Balzer, 2010).

These examples illustrate Lean's versatility across various sectors.

Implementing Lean strategies necessitates a holistic approach encompassing tools, cultural transformation, and leadership commitment. Adhering to Lean principles and addressing potential challenges proactively, organizations can achieve enhanced efficiency, reduced waste and improved customer satisfaction.

2.12.5 Efficiency and effectiveness in Higher Education information flow

In the dynamic landscape of higher education, the efficient and effective flow of information is paramount to institutional success. As universities, colleges and private educational institutions grapple with increasing demands for accountability, transparency and performance the management of information becomes a critical factor in achieving educational objectives (Khamdamov et al. 2020).

Understanding Efficiency and Effectiveness in Information Flow

Efficiency in information exchange flow refers to the optimal use of resources to ensure the timely and accurate sending and receiving of information across various departments and stakeholders within an institution or institutions. Effectiveness, on the other hand, relates to the degree to which the information being exchanged contributes to achieving the institution's strategic goals such as enhancing student learning outcomes, facilitating research or supporting administrative functions (Wen, 2024). Together these concepts underscore the importance of not only streamlining information processes but also aligning them with the institution's mission and objectives.

Challenges in Information Flow within HEIs

Fragmented Information Systems - Many HEIs operate with disparate information systems that lack integration, leading to data silos and inefficiencies. This fragmentation hampers the seamless exchange of information, resulting in redundancies and inconsistencies that can affect decision-making processes. Although some HEI's, colleges and their partners may have begun to adopt some form of application for information-based education and teaching systems, achieving constant outcomes that support the overall integrity required, there are still many shortcomings in such systems (Chen, 2024). Chen concludes saying that it is also necessary to deeply understand the development reality whilst promoting resource sharing based on information flow integration. **Data Quality and Integrity** - Ensuring the accuracy, consistency and reliability of data is a constant challenge. Inaccurate or outdated information can lead to misguided decisions affecting academic planning, resource allocation and student outcomes.

Resistance to Change

Implementing new information systems or processes often encounters resistance from staff accustomed to existing workflows. This resistance can impede the adoption of more efficient and effective information management practices.

Privacy and Security Concerns

With the increasing digitization of information, HEIs must navigate complex issues related to data privacy and security. Protecting sensitive information while ensuring accessibility for authorized users is a delicate balance that institutions must maintain.

Strategies for Enhancing Information Flow

1. Integrated Information Systems

Adopting integrated information systems can significantly improve efficiency by facilitating real-time data sharing across departments. Such systems enable a unified view of institutional data, supporting informed decision-making and reducing redundancies.

2. Standardization of Data Practices

Establishing standardized data entry, storage, and retrieval protocols ensures consistency and accuracy across the institution. Standardization also simplifies training processes and enhances data interoperability.

3. Stakeholder Engagement and Training

Engaging stakeholders in the development and implementation of new information systems fosters a sense of ownership and eases the transition. Comprehensive training programs equip staff with the necessary skills to utilize new systems effectively.

4. Robust Data Governance Frameworks

Implementing data governance frameworks ensures that data management practices align with institutional policies and regulatory requirements. Such frameworks delineate responsibilities, establish data quality standards, and promote accountability.

Implications of Optimized Information Flow

Enhancing the efficiency and effectiveness of information flow within HEIs yields numerous benefits:

- **Improved Decision-Making:** Access to accurate and timely information enables administrators to make informed decisions regarding academic programs, resource allocation, and strategic planning.
- **Enhanced Student Services:** Efficient information flow supports personalized student services, such as academic advising and career counseling, by providing comprehensive student data to relevant departments.

- **Increased Operational Efficiency:** Streamlined information processes reduce administrative burdens, allowing staff to focus on core educational and research activities.
- **Compliance and Risk Management:** Effective information management ensures compliance with legal and regulatory standards, mitigating risks associated with data breaches and non-compliance.

Research indicates that institutions implementing integrated information systems and robust data governance frameworks experience notable improvements in operational efficiency and decision-making capabilities (Alvarez-Sández et al. 2023). The same author also highlighted the positive impact of administrative process efficiency measurement in HEIs, emphasising the role of standardised practices and stakeholder engagement in achieving desired outcomes. Similarly the adoption of academic analytics has been shown to enhance student success by enabling early identification of at-risk students and facilitating targeted interventions (Campbell & Oblinger, 2007).

The efficiency and effectiveness of information flow are critical determinants of success in higher education institutions. Addressing challenges related to fragmented systems, data quality, and resistance to change, and by implementing strategic measures such as integrated systems, standardization, stakeholder engagement, and robust data governance, HEIs can optimize their information management practices. Such enhancements not only improve operational efficiency but also contribute to better educational outcomes, informed decision-making, and compliance with regulatory standards.

In contemporary times, the implementation of a Higher Education Management Information System (HEMIS) is essential for ensuring effective and high-quality planning of administrative, educational, scientific, economic, and financial operations within higher education institutions (HEIs). Such a system facilitates the monitoring of the institution's targeted objectives and promotes seamless electronic data exchange among all stakeholders involved in the educational process within the higher education framework.

The adoption of specialized information systems tailored for the higher education sector enables the comprehensive automation of institutional activities. This advancement will lead to the establishment of a unified database encompassing all types of higher educational institutions at the national level. Furthermore, it will support the creation of a detailed database that includes information on the student body, faculty, and administrative staff of

these institutions. This capability is crucial for the ongoing assessment and monitoring of the administrative, educational, scientific, and financial functions of HEIs.

As the landscape of higher education continues to evolve, the integration of HEMIS is not merely a technological enhancement but a fundamental shift towards more efficient management practices. This system plays a pivotal role in streamlining processes and improving the overall quality of education. By automating routine administrative tasks, HEMIS allows educators and administrators to focus more on strategic planning and decision-making, which can lead to improved educational outcomes.

Moreover, the creation of a centralized database serves multiple purposes. It enables HEIs to track student enrollment trends, assess faculty performance, and analyze financial resources. This comprehensive data collection is vital for informed decision-making and policy formulation at both institutional and governmental levels. For instance, by having access to real-time data on student demographics and performance metrics, institutions can tailor their programs to better meet the needs of their students, thereby enhancing retention rates and overall educational effectiveness.

The implementation of HEMIS also supports transparency and accountability within the higher education sector. With a robust data management system in place, institutions can provide stakeholders, including students, parents, and regulatory bodies, with accurate and timely information. This transparency fosters trust and confidence in the educational system, which is critical for attracting new students and securing funding from various sources.

In addition to these benefits, HEMIS can facilitate collaboration between different educational institutions, government agencies, and industry partners. By enabling data sharing and communication among stakeholders, the system can help identify best practices and foster innovation in educational delivery. For example, collaborative research projects can be better managed with accessible data on available resources and expertise across institutions.

Furthermore, the global shift towards digitalization in education underscores the necessity of implementing HEMIS. As more institutions adopt online learning platforms and digital resources, the need for an integrated management system becomes even more pressing. HEMIS can support the management of online courses, track student engagement, and optimize resource allocation, ensuring that institutions remain competitive in a rapidly changing educational landscape.

The implementation of some form of Higher Education Management Information System (HEMIS) is now a crucial requirement if HEI's and partnerships wish to develop their working collaboration into a more effective and efficient operation. Having more automated processes, creating centralized databases and fostering transparency and collaboration, a HEMIS would enhance the overall quality and efficiency of the education sector. As higher education continues to adapt to new challenges and opportunities, the role of advanced management systems like HEMIS will be increasingly important in shaping the future of learning and institutional success (Martins et al. 2019).

Chapter Three: Research Methodology

3.1 Introduction

This chapter outlines the qualitative methodology utilised in this study. The qualitative research employed here aims to examine the thoughts, opinions and ideas of key people

within an academic setting. The methods used include an initial informal focus group followed by an online questionnaire that took part during the Pandemic period and was also used to support a developmental paper for the 2022 BAM conference in Manchester. As a triangulation approach there were then 12 semi-structured interviews conducted in 2024. The focus group was held at one of the University main campuses and included both academics and professionals. The group knew of this research so had an interest in contributing and then seeing the results once complete. The benefit of this initial method was to elicit detail, information and ideas that would then form the basis of the questions used in the semi-structured interviews. This initial stage also supported the purposive and snowball sampling methods used for this research as this meeting was also beneficial to collate information about stakeholders and identify questions needed for the semi-structured interviews that would add the most value to the research.

Fossey, et al (2002) define qualitative research as a broad term that encompasses methodologies for describing and extracting an individual's experiences, behaviours, interactions, thoughts and ideas without having to depend on statistical procedures or quantitative data collection. During the initial stages of the literature search the option for quantitative or qualitative data collection was still very much open. Throughout the process of gathering sources and identifying those most suitable, it soon became quite clear that most, if not all of the materials being read were also adopting a qualitative method for gathering primary data. In addition to this there was a compelling motivation to choose an option that would allow the researcher to meet with participants and discuss the topic in as much detail as possible. Having an intrinsic passion and belief in the process of change but also the potential for greater outcomes, the researcher decided that a qualitative method was the most suitable. This qualitative approach aims to offer participants the opportunity to openly, honestly and extensively discuss their opinions of a particular subject area (Sukamolson, 2007).

In contrast, quantitative research tends to rely on closed-ended questions followed by some form of statistical analysis whereas qualitative research adopts open-ended questions. These open-ended questions entice participants to expand on their own experiences, offering the researcher a comprehensive and detailed insight into the research topic (Corner et al., 2019). Qualitative research allows the collection of data in numerous formats including numbers, text, images, and the capture of cues during interviews such as emotions. This method of data collection empowers participants to freely express their thoughts, opinions and emotions, thus offering valuable insights into the topic area and often highlighting broader perspectives.

The aim of this qualitative study was to examine the thoughts, opinions and ideas of key participants in a Higher education setting towards the idea of a Lean approach to collaborative partnerships information exchange and in particular, whether there was consensus that such an approach was needed and if in fact, the industry was actually ready for such change. The objectives set for achieving this aim were to use the qualitative approach through semi-structured interviews of stakeholders with the intention of ascertaining if and what the similarities or differences of opinions might be. In addition to this the overall aim was to seek a consensus that would identify if a lean approach could be adopted and if so, what the benefits of such a change might be.

Cleland (2017) states that qualitative research is concerned with interpreting participants experiences and opinions in a simplistic way to then analyse and find answers to the research questions by utilising a systematic approach that follows a pre-determined process. This is different to an approach that uses quantitative research, which requires quantifying and then testing any hypothesis that may have been adopted using numerical data. The literature also highlights various limitations associated with a qualitative research approach. In a qualitative approach, the researcher assumes a vital role, allowing the development of an interview process to gather data (Creswell and Creswell, 2017). The use of a qualitative methodology enables researchers to conduct inductive data analysis, facilitating the identification of patterns, extraction of categories, and development of themes from participants' responses. By using a qualitative framework, researchers can provide a comprehensive account of the problem or issues under examination, particularly for subjects with minimal prior investigation, such as a Lean approach for collaborative higher educational partnerships.

The main drawback of qualitative data collection being the time-consuming and resource-intensive nature of such an approach, specifically during the data collection phase. Qualitative research typically involves gathering data through in-depth interviews or focus groups, necessitating substantial time and effort for proper execution (Williams, 2007). In addition to this, the analysis of qualitative data can be complex, requiring a considerable amount of time. Another limitation of qualitative research is the difficulty in establishing a connection between cause and effect during the process of transcription and coding (Houghton, et al. 2019). These methods are often used to delve into complex topics and gain insights into the participants' experiences and perspectives. Consequently, trying to establish causation solely through qualitative data methods can be challenging. For this particular research the time element was managed by ensuring that the interviews were

scheduled in a timely manner and that each one was controlled by the researcher to keep things on track and within the allocated duration. The fact that this topic is of significant interest to the researcher also supported the timings and that all questions were covered with as much valuable feedback from the interviewees as possible. On occasion when interviewees show a deep understanding of the topic and there is strong initial evidence to suggest that the interview will reap even greater rewards than expected, then allowing a little more time is beneficial.

Another limitation is around the potential impact of subjectivity on the reliability and validity of study results. Qualitative data collection can rely quite heavily on the participants self-reporting which can be influenced by social desirability bias or even the participants interpretation of the study's objectives. Due to this the verifiability of qualitative data results may not be as robust as that of quantitative data methods. In the case of this particular research, this type of limitation won't apply because the participants were chosen through a purposive sampling process that identified a specific group of individuals, all of which had experience, genuine interest and an intrinsic motivation to contribute. Another factor that helped mitigate this limitation was that each participant was sent a document prior to the interviews that requested consent, explained the background of the research but then also fully explained the details of the interview questions so that they could make an informed decision about their own involvement without subjectivity. Conducting qualitative research requires significant effort and resources, specifically during the data collection and analysis phase, making the process both time-consuming and challenging without any adequate support and resources (Basias and Pollalis, 2018). Despite these limitations, qualitative research methods can offer significant value in exploring intricate research questions and acquiring in-depth insights into participants' experiences and perspectives (Moser and Korstjens, 2018).

Acknowledging and then addressing potential drawbacks enables researchers to enhance the quality and rigor of their studies, resulting in richer outcomes. Qualitative research methods facilitate the exploration of diverse topics, help with exploratory analysis into new areas, offer detailed information about a subject and generate significant data (Williams, 2007). According to Basias and Pollalis (2018), qualitative research includes various activities such as observing, interviewing, summarising, describing, analysing, and interpreting phenomena in their actual dimensions. Whilst not statistically representative, qualitative research methods allow researchers to capture the complexity of human experiences, often overlooked by quantitative research. The ease of which participants can

express their thoughts, feelings and opinions contributes to such rich data. Additionally, qualitative research proves beneficial in fields with limited information, serving as a starting point for further exploratory studies. This methodology chapter looks into the research questions, research design, data collection methods, population and sampling, interview design and questions, interview process and data analysis procedure.

3.2 Research Aim and objectives

As mentioned in chapter one the aim of this research is to explore stakeholder perspectives on adapting a lean approach in higher education collaborative partnerships. Objectives include identifying stakeholder views on the need for improvement, assessing consensus on lean adoption, examining potential benefits, and exploring readiness for change.

Overall research objectives:

- To identify any similarities and differences in stakeholder views towards the need for improvement in HE collaborative partnership processes
- To establish if a consensus would indicate that a lean approach to the process of information exchange could be adopted
- To examine what benefits might arise through an adoption of lean practices and principles in the HE sector
- To explore the readiness of change within the HE sector, specifically within collaborative partnerships

This study employs a qualitative methodology, specifically an informal focus group, online questionnaire and 12 semi-structured interviews, to explore stakeholder perspectives on adopting a lean approach in higher education collaborative partnerships. Table 1 below outlines the methodological steps taken to achieve each research objective, ensuring alignment with the research questions and overall research aim.

Table 1: Methodological steps

Objective	Research Questions	Methodological Steps
1. Identify similarities and differences in stakeholder views on HE collaborative partnership improvements	How do stakeholders perceive the need for improvement in HE partnership processes, and is there a consensus?	- Conduct semi-structured interviews with open-ended questions focusing on experiences and challenges. - Use purposive and snowball sampling to select key

Objective	Research Questions	Methodological Steps
		stakeholders. - Analyse data using thematic analysis with NVivo, coding for recurring themes and patterns.
2. Establish consensus on adopting a lean approach to information exchange	How can a lean approach enhance information flow in HE partnerships, and what are the specific benefits?	- Include questions on lean principles in the interview guide. - Select participants with varying knowledge of lean practices. - Use axial coding to refine themes related to lean adoption and develop a consensus framework.
3. Examine the benefits of adopting lean practices in the HE sector	How can a lean approach enhance information flow in HE partnerships, and what are the specific benefits?	- Ask targeted questions about the benefits of lean practices. - Include diverse stakeholders to capture a range of perceived benefits. - Conduct selective coding to identify and categorise benefits, using NVivo to develop a comprehensive list of benefits.
4. Explore readiness for change within the HE sector	How prepared is the UK HE sector to integrate lean principles in partnership processes?	- Include questions about organisational culture and readiness for change. - Select a diverse group of participants across different roles and institutions. - Perform thematic analysis to identify factors influencing readiness, using NVivo to code barriers and enablers.

By employing these methodological steps, this research aims to gather detailed insights into stakeholder views, potential benefits, and readiness for adopting lean principles in HE collaborative partnerships, contributing to the overall research aim and existing literature.

3.3 Research questions

The focus of this research is to establish if there is basis for the adaptation of a lean approach into Higher Education and in particular, that of collaborative partnerships and the

exchange of information. Since a grounded theory methodology was adopted for this research the aim was to establish, through multi-method qualitative data collection and analysis, a consensus of opinion based on varying levels of knowledge.

Subsequently, research inquiries were formulated to steer the investigation and enhance the body of existing literature. The specific research questions initially emerged following an informal focus group study conducted through a purposive approach that included a small group of academics and professionals at two of the University partners (5 staff in total). In the early stages of confirming the research area the group were established, expressing their interest in the topic especially as they all had significant parts to play in the processes that could be affected but also as they held significant roles within their respective institutions and more importantly, how they could influence any prospective change or improvement as a result of this study. The participants knew of the subject through their own research and networks with other professionals and held roles including Pro Vice-Chancellor, Head of Collaborative Partnerships and Deputy Dean Collaborative Partnerships. As such the focus groups managed to help forge the following research questions:

- How do stakeholders (experts) perceive the need for improvement in higher education partnership processes, and is there a consensus on these improvements?
- How can a lean approach enhance information flow in collaborative higher education partnerships, and what are the specific benefits?
- How prepared is the UK higher education sector to integrate lean principles and practices in its partnership processes?

3.4 The Research Methodology

When conducting research, selecting the appropriate methodology is crucial to ensure the validity, reliability, and rigor of the study. Research methodology refers to the systematic approach used to collect, analyse, and interpret data to address research questions. The choice of methodology often depends on the research objectives set for the thesis, the nature of the data required and the context of the research itself. In this instance one of the objectives set required the research method to identify the similarities and differences in stakeholder views towards improvement in HE partnerships. The researcher determined that

the best way to do this was through semi-structured interviews in order to gather these points of view by actually speaking to stakeholders, academics and professionals and asking their opinions, thoughts and ideas and by doing so, it was then possible to gauge and identify those similarities and differences thus satisfying research objective one. Research objective two would also align with a qualitative data collection as this was looking for a consensus and clearly the best way to do this is to gather an overwhelming or overarching confirmation, again by asking stakeholders to elicit their thoughts on this.

Quantitative research involves the collection and analysis of numerical data to identify patterns, test hypotheses, and establish relationships between variables. This methodology is widely used when the researcher aims to quantify the problem and gain statistical insights. The primary methods of data collection in quantitative research include surveys, experiments, and structured interviews. Quantitative methods are ideal for research that seeks to generalize findings from a sample to a larger population, as they allow for the use of large datasets and statistical tools to validate results. One key justification for choosing quantitative research is the desire for objectivity and replicability (Bryman, 2012). In areas like science, psychology, and economics quantitative research provides a basis for hypothesis testing and theory development. Experimental designs in psychology enable researchers to control variables and measure outcomes, while surveys in sociology allow the examination of correlations across large samples. However, quantitative research can be limited in its ability to explore complex social phenomena because it often lacks contextual depth. Researchers need to ensure that the numerical data collected align well with the research questions and the focus on numbers may overlook human experiences and the intricacies of behaviour (Creswell, 2014).

Qualitative research however, focuses on understanding phenomena from a subjective and human-centred perspective. It involves methods such as interviews, focus groups, and case studies that allow for deep exploration of participants' experiences, feelings, and beliefs. Qualitative research is justified when the research aims to explore how or why something happens, rather than simply quantifying the results. The primary justification for choosing this qualitative research approach is its ability to capture rich, detailed data that can reveal insights into underlying thoughts, ideas, experiences and motives for change (Denzin & Lincoln, 2011). In the social sciences area, qualitative methods are often used to understand cultural or social dynamics within specific contexts. In education, interviews and ethnographic studies may be used to understand how students experience learning in particular environments. Qualitative research is highly flexible, allowing researchers to adapt to new insights as they emerge. However, it is often criticized for being subjective and harder

to generalize because of smaller sample sizes. Nonetheless, researchers argue that qualitative data offers depth and detail, making it an ideal approach for exploratory or interpretive research (Creswell, 2014).

Another option is that of mixed-methods research which combines both quantitative and qualitative approaches to offer a comprehensive understanding of the research problem. By integrating numerical data with rich qualitative insights, mixed-methods studies aim to address research questions that neither approach could answer alone. Researchers justify using a mixed-methods approach when a single methodology is insufficient to capture the complexity of the research topic. Researchers of healthcare topics may use quantitative surveys to assess the prevalence of a condition and qualitative interviews to understand patients' lived experiences (Creswell & Plano Clark, 2011). The advantage of this type of research is that it allows for triangulation where multiple data sources support findings, enhancing the study's validity. However, this approach requires more resources, time, and expertise to collect and analyse both types of data.

Case study research involves an in-depth investigation of a specific instance, group, or organization. The method is justified when the researcher seeks to understand a complex phenomenon in its real-world context (Yin, 2018). Case studies are often used in business, education, and social sciences to explore issues such as organizational change or educational reform in-depth. This method provides rich contextualized data that may not be obtainable through other methodologies. The main limitation of case study research is that its findings may not be generalizable to broader populations. However, researchers justify its use when they aim to gain deep insights into a particular case especially when generalizability is not the main goal.

The choice of research methodology is influenced by the nature of the research problem, the objectives of the study, and the type of data required (Saunders et al., 2018). Quantitative methods offer objectivity and replicability but may overlook contextual depth whereas qualitative methods provide rich, detailed insights but may be harder to generalize. Mixed methods approach allow for the integration of both quantitative and qualitative data, providing a more holistic understanding. Case studies offer in-depth insights into specific cases but may lack broader applicability. For this reason the researcher decided against an overall case study approach but has included this option in chapter six where a specific institution has been used. Researchers need to carefully justify their methodological choices to align with their research goals and provide credible, reliable results.

This study employs a qualitative methodology, specifically semi-structured interviews, to gather in-depth data from stakeholders. This approach facilitates a detailed exploration of experiences and perspectives, which is crucial for understanding the potential for lean implementation in HE partnerships. Regardless of the type of methodology used, it is important that the research design be well-thought-out and well-structured. This includes specifying the research question, identifying the target population, choosing an appropriate sample, determining the type of data to be collected, and deciding on the methods for collecting and analysing the data. The methodology should also be clearly outlined in the research report or publication, so that other researchers can understand the steps taken to arrive at the conclusions. This is important for establishing the credibility of the research and for facilitating the replication of the study by other researchers (Bryman and Bell 2015). In addition, it is important for researchers to be transparent about any limitations of their methodology and to acknowledge any sources of bias or confounding variables that may have influenced the results.

This is known as the "limitations" or "weaknesses" section of a research paper and is a critical component of the methodology. Saunders Research Onion (Fig 1 below) is a framework for research design and methodology that was first introduced by Professor Philip Saunders in the late 1990s. The framework is based on the idea that research is a layered process that involves multiple stages, and that each stage is influenced by the one before it. The framework provides a systematic approach to conducting research and is commonly used by researchers in a variety of disciplines, including business, sociology, and psychology.

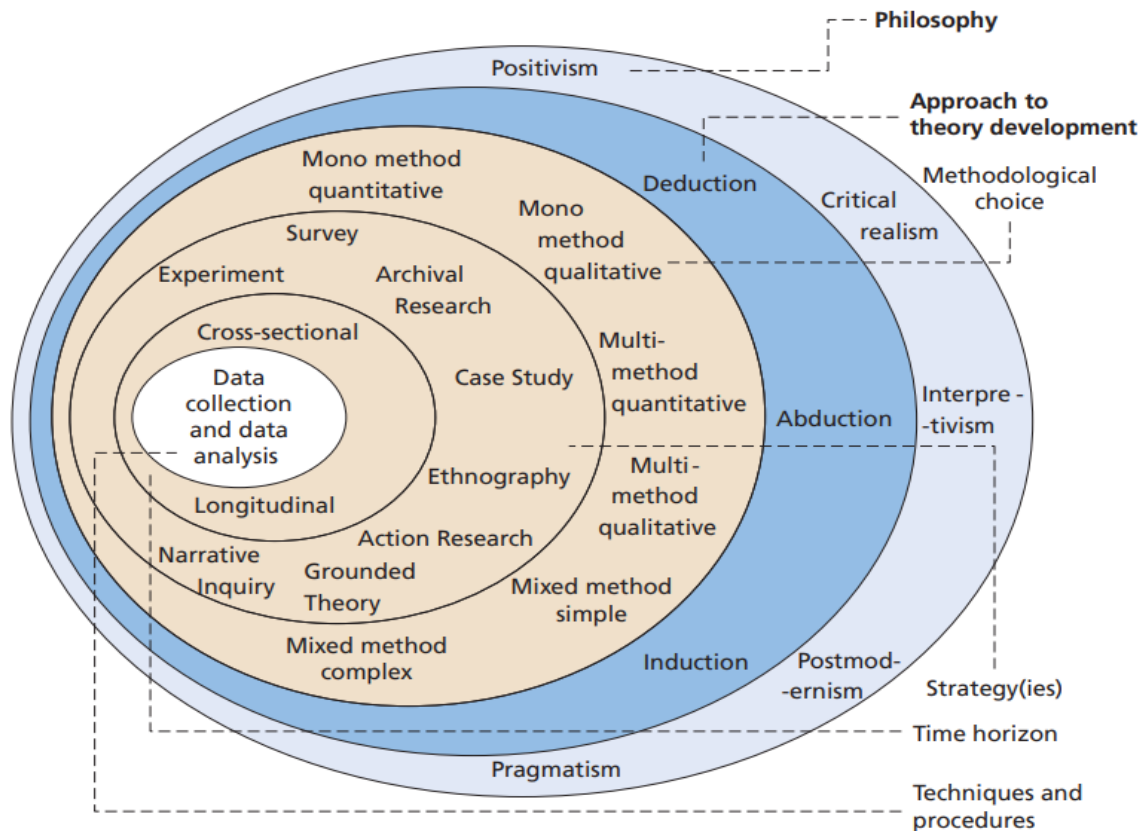


Figure 2: Saunders research onion. Source: Saunders et al, 2018

3.5 Research philosophies

This study adopts an interpretivist and pragmatic philosophy. Interpretivism is appropriate for understanding stakeholder experiences and opinions, while pragmatism supports a practical analysis of the feasibility and benefits of adopting lean principles in HE partnerships (Saunders et al., 2018; Tamminen & Poucher, 2020). These philosophies provide a framework for thinking about the nature of knowledge and the methods that should be used to generate new knowledge. There are several different research philosophies, each with its own strengths and weaknesses, and each suited to different types of research questions and methods.

Positivism is one of the earliest and most influential research philosophies. This approach views knowledge as something that can be objectively measured and verified through the scientific methods (Saunders et al., 2018). According to positivism, the only knowledge that can be considered valid is that which can be empirically verified through observation and experimentation. Positivist research typically involves the collection and analysis of quantitative data and relies heavily on statistical methods to test hypotheses and draw

conclusions. This approach is well suited to studies that aim to test theories or make generalisations about a population (Newman and Gough, 2020).

Another popular research philosophy is interpretivism which emphasises the importance of understanding human experiences and perspectives (Nickerson, 2022). This approach views knowledge as something that is socially constructed and subjective but sees the role of the researcher as that of an interpretive observer. Interpretivist research typically involves the collection and analysis of qualitative data such as interviews or ethnographic observations and is well suited to studies that aim to understand the experiences and perspectives of individuals or groups (Hurlimann and Hurlimann, 2019). This philosophy has been chosen as the most appropriate for this research and data collection as it will provide the necessary platform to conduct semi-structured interviews. These interviews aim to elicit the participants experience, perspectives and opinions thus being able to apply an inductive approach.

Critical theory philosophy emphasises the importance of understanding power relationships and social inequalities. This approach views knowledge as something that is socially constructed and shaped by power relationships and seeks to challenge dominant ideologies and structures of oppression. Pragmatism is a philosophy that emphasises the importance of practicality and utility. This approach views knowledge as something that is constantly evolving and shaped by practical experience and sees the role of the researcher as that of a problem solver (Saunders et al., 2018). This research has also adopted this philosophy alongside that of interpretivism as both fit the aim of the overall thesis and would allow synergies in terms of practical interpretation of the qualitative data.

Each of these research philosophies has its own strengths and weaknesses and each is better suited to certain types of research questions and methods. For example positivism is well suited to studies that aim to test theories or make generalisations about a population while interpretivism is better suited to studies that aim to understand human experiences and perspectives. It is also important to note that many researchers do not adhere strictly to a single philosophy but instead adopt a mixed methods approach that combines elements of multiple philosophies (Mishra and Alok, 2022).

Research philosophies play an important role in shaping the way researchers approach their work. They provide a framework for thinking about the nature of knowledge and the methods that should be used to generate new knowledge and help researchers to choose the most appropriate methods and techniques for their specific research questions. Whether a researcher is a positivist, interpretivist, critical theorist, pragmatist, realist or constructivist,

the ultimate goal is always to generate new knowledge and advance the current understanding of the world.

3.6 Research Approaches

This study employs an inductive approach, starting with specific observations from stakeholder interviews to develop broader theories about the adoption of lean principles in HE partnerships (Mukherjee, 2019). This approach is suitable given the exploratory nature of the research and the limited existing knowledge on this topic. Inductive and deductive research approaches both represent fundamental methods of scientific inquiry, each with distinct characteristics and applications. Understanding the differences between these approaches is crucial for researchers when designing studies and interpreting results.

3.6.1 Inductive Research Approach

The inductive research approach is exploratory in nature, focusing on generating new theories and hypotheses based on observed data. This method is often used in qualitative research where the aim is to gain a deeper understanding of complex phenomena. In an inductive approach researchers start with specific observations and move towards broader generalisations and theories (Nowell et al, 2017). Some of the key characteristics of this approach include a 'bottom up process' whereby the research process starts with detailed observations of the world and then progresses to the formulation of wider generalisations and theories. Another key characteristic is the ability to generate a new theory or update an existing one based on the data gathered. Data collection can be initiated without any bias or prior perception, thus allowing the findings to guide the development of new theories and hypotheses. This approach also aligns with a qualitative grounded theory and case study approach resulting in rich and detailed data. A final characteristic, and one that also aligns with this research is that of an inductive approach being particularly useful with topics where prior knowledge is limited and any existing theories are inadequate.

3.6.2 Deductive Research Approach

The deductive research approach in contrast, is aimed at testing currently existing theories and hypotheses. It is most often used in quantitative research where the focus is on confirming or establishing prior theories through structured and controlled experiments or observations (Jones et al, 2018). Similar to that of the inductive approach, deductive research also has characteristics but these may begin with a theory or hypothesis and then

gather quantitative data to test such theories. As such this approach is very structured and controlled, being very hypothesis driven in nature.

3.7 Justification of approach

This research has chosen an inductive approach for a combination of reasons mentioned above. An inductive approach is particularly advantageous when dealing with qualitative data collection due to its flexibility, adaptability, and depth of insight it can provide. An inductive approach to research involves the development of theories or patterns based on observations, data collection, and analysis. Unlike a deductive approach, which starts with a hypothesis and seeks to test it, inductive research begins with specific observations or real-world phenomena and works toward generating broader generalizations or theories. This approach is particularly useful in exploratory studies where little is known about a subject or where existing theories are inadequate; in part this is also a reason why inductive is applicable to this research. The inductive approach is widely used in qualitative research particularly in the social sciences to uncover new insights into human behaviour, organizational dynamics, or cultural practices.

In inductive research, the goal is to derive meaning from the data without imposing pre-existing theories or expectations. The approach is open-ended and flexible, thus allowing the researcher's understanding to evolve as the data is collected and analysed. As patterns or themes emerge the researcher can formulate a theory about what factors influence the topic being researched. According to Thomas (2006) an inductive approach helps in condensing raw textual data into a summary format and establishing clear links between research objectives and the findings. It enables the researcher to move from the specific to the general by developing theoretical explanations based on the data gathered.

Within this study the inductive approach begins by defining a broad, open-ended research title which also reflects the question that is exploratory in nature – in this case ‘could a lean approach be effective if adapted for the process of information flow in Higher Education collaborations?’ This research question in this inductive study seeks to understand a phenomenon, in this particular instance, if a lean philosophy could be adapted and utilised effectively within a HE collaborative partnership.

The sampling method chosen within this inductive approach is one that requires a specific group of stakeholders who need to have some prior knowledge of the topic so that value and substance is added to the body of knowledge. For this reason a purposive and snowball

method was chosen. This involved selecting participants that are most likely to provide rich, relevant, and diverse data. The goal is not necessarily to achieve generalisability but to gain deep insight into this particular topic area. Inductive research relies heavily on qualitative data collection methods which is why an initial focus group was facilitated, followed by an online qualitative survey, concluding with 12 semi-structured interviews. The reason that interviews were chosen was to gain an in-depth understanding of the participants experiences, thoughts, ideas and perceptions. Data collection could be iterative should new themes emerge. Another noteworthy point is that the conceptual model shown in chapter 2 required assessment and validation to explore whether or not the elements within the model would in fact support the aim of the research.

In the data analysis stage, the first step with an inductive approach is to become familiar with data collected, in this case the transcripts were read a number of times to fully appreciate the content but also to take notes as and when required. During this process recurring patterns or themes began to emerge that began to link back to the objectives and research questions. In the next stage the researcher coded the participants to allow identification of who they were, their geographical location but more importantly, which University they worked with (see table 3). Coding allows data to be broken down into meaningful units such as required for this research and is derived from the data itself.

With the data coded, the researcher was then able to group similar codes together in order to form categories, these then representing themes or patterns from the data. According to Braun and Clarke (2006), thematic analysis is a common method used in inductive research to identify and analyse patterns of meaning within the data. As the themes and categories emerged the researcher was able to identify patterns and relationships. At this point the aim is to formulate a theoretical framework (Fig 5) that is grounded in the data and can then be used to relate and link to the analysis of the themes (Charmaz, 2006). The iterative nature of inductive research means that the researcher could continue to gather and analyse data until no new themes or patterns emerge, this is known as data saturation. Guest et al (2006) stating that saturation occurs when additional data collection no longer contributes new insights or themes to the analysis.

An inductive approach is a valuable methodology in research, particularly when studying new or poorly understood phenomena. The process of data collection and analysis in inductive research involves defining open-ended research questions, using purposeful sampling, and relying on qualitative methods like interviews and observations. The data analysis process, from initial coding to theory development, allows for the emergence of

themes and patterns that contribute to the generation of new theories. This flexible, iterative approach enables researchers to explore complex issues and gain deep insights grounded in empirical data.

Qualitative data collection such as semi-structured interviews requires a method that can accommodate the complexity and richness of human experiences and social phenomena. The openness allowed by an inductive approach enables the researcher to adjust their focus as new insights emerge, this being crucial when dealing with qualitative data that can be unpredictable and multifaceted. The interviews have the ability to capture very rich and deep data around participants emotions, thoughts and ideas, often uncovering patterns or themes that may otherwise be overlooked. Finally, an inductive approach is particularly suited when limited prior knowledge is available, for example, a grounded theory, a commonly used inductive approach in qualitative research, involves the systematic collection and analysis of data to build theories that are grounded in the actual data.

The inductive approach is central to this study, allowing the researcher to build theories based on the observations and insights gathered from participants. This approach is particularly suitable for exploratory research where the goal is to understand complex phenomena from the ground up. By using an inductive methodology, this study will systematically collect and analyse qualitative data to generate new theories about the adoption of lean practices in HE collaborative partnerships. In data collection, semi-structured interviews are employed to allow participants to freely express their thoughts, experiences, and feelings about HE partnerships and lean practices. These interviews are designed with open-ended questions to elicit detailed narratives, capturing the richness and depth of participants' perspectives. The interviews are recorded and transcribed to ensure that all nuances and subtleties in the responses are preserved. A combination of purposive and snowball sampling is used to select a diverse group of stakeholders, ensuring that the data collected is both relevant and comprehensive.

3.8 Research strategies

Experimental, case study, survey research and grounded theory are four distinct approaches to collecting data and testing hypotheses in the social sciences. Each approach has its own strengths, weaknesses and applications and researchers must choose the best approach depending on the nature of the research question and the resources available.

One of the strengths of experimental research is that it allows researchers to make causal inferences, that is, to determine whether changes in the independent variables cause changes in the dependent variable. This is because the manipulation of the independent variables and the random assignment of participants to treatment and control groups eliminate alternative explanations for the observed effects. However, experimental research also has its limitations. For example, laboratory experiments may not accurately reflect real-world situations and the results of experiments may not generalise to other populations or settings. In addition ethical considerations such as the use of placebo control groups can be a concern in some experimental research.

Case study research is an in-depth investigation of a single case or a small number of cases. The goal of case study research is to gain an in-depth understanding of the case or cases being studied and to generate new theories and insights. Case studies are often used in the social sciences such as sociology, psychology, and anthropology, to study unique or unusual phenomena that cannot be explained by existing theories. One of the strengths of case study research is its ability to provide rich detailed descriptions of complex phenomena. Case studies allow researchers to examine multiple sources of data including interviews, observations, and documentary evidence, which can provide a comprehensive understanding of the case or cases being studied. However, case study research also has its limitations. For example, because case studies are based on a small number of cases the results may not generalise to other populations or settings. In addition, case study research is often subjective as the researcher's own biases and preconceptions can influence the interpretation of the data.

Survey research is a method in which data is collected from a sample of individuals through self-administered questionnaires or semi-structured interviews. The goal of survey research is to describe and generalise the characteristics of a population based on the responses of a sample of individuals. Surveys are often used in the social sciences such as sociology, psychology, and economics to study attitudes, beliefs, and behaviours. One of the strengths of survey research is its ability to collect data from a large number of individuals in a relatively short period of time. This allows researchers to obtain a representative sample of the population which can provide a reliable estimate of the characteristics of the population.

This research chose to conduct a multi-method qualitative strategy alongside a grounded theory. As previously mentioned, an initial informal focus group was initiated in order to identify the most appropriate research questions for the thesis itself but also to inform the questions that would then form a basis for the semi-structured interviews. In this research,

engaging participants who had varying knowledge and/or expertise in Lean was vital for shaping an outcome that could explain any possible emerging themes or concepts. By employing an inductive approach and using relevant coding, the theory derived from the participants' feedback would be rooted within their responses (Corbin & Strauss, 2015). The researcher adopted the grounded theory method to construct a comprehensive understanding of the thoughts, opinions and ideas around the topic area whilst exploring the ideas informed by the perspectives of the participants.

The selection of a grounded theory for this research stems from an insufficient comprehension and acknowledgment of the topic. This approach was preferred over other methodologies because it allowed the researcher to construct a broad, conceptual framework based on stakeholder opinions, experiences, and perspectives, potentially supported by collaborative partners. Grounded theory was also adopted as it allows for a systematic, inductive approach to formulating a theory rooted in qualitative research data (Charmaz, 2003). Typically, and in this case, data in grounded theory studies is gathered through interviews (Williams, 2007). Grounded theory, which emphasises generating theories from data, supports the inductive approach by providing a structured yet flexible framework for theory development. This study's inductive approach ensures that the resulting theories on lean adoption in HE partnerships are deeply rooted in empirical evidence, reflecting the authentic views and experiences of stakeholders. By iteratively comparing findings and adjusting the coding framework, the study maintains a comprehensive and well-grounded theoretical development.

Creswell (2003) states that the grounded theory methodology aims to develop a general, abstract theory grounded in the viewpoints of study participants. Lazar et al. (2017) supports this by stating that there are four stages of the grounded theory approach; open coding, where researchers start their data analysis by identifying phenomena, concept development, whereby specific ideas, terms, and keywords identifying a situation are recognised, categorising concepts, where codes describing similar content are collated and grouped under one category, and finally, theory formation, where researchers are able produce a statement about the outcome through the analysed data. Another aspect of the grounded theory methodology that justified its adoption as the overarching framework for this research was its methodical approach to analysing data, which involved identifying patterns, categories, and themes (Corbin & Strauss, 2015).

3.9 Data collection

Primary and secondary data collection are two essential methods of gathering information for research or data analysis. The choice between the two methods of data collection is dependent on the purpose, scope, and budget of the research project.

Primary data collection is the process of collecting data directly from the source. This method of data collection involves collecting data through questionnaires, interviews, focus groups, or direct observations. Primary data is original data that has not been previously collected or analysed. The primary data collected is tailored specifically to the research objectives and is therefore considered to be the most reliable and relevant data for the research project. Advantages of primary data collection include increased accuracy, relevance and specificity of the data collected as well as the ability to control the data collection process. Collecting data directly from the source allows the researcher to control the quality and validity of the data as well as tailor the data collection method to fit the specific research objectives. However, primary data collection can also be time-consuming and expensive, requiring a significant investment of time, effort and resources to design and implement a primary data collection method. Additionally primary data collection can often be limited by the sample size which can then impact the generalisation of the results. The selection of a grounded theory approach for this research also supports the need to gather primary data as the topic has limited comprehension and acknowledgment.

Secondary data collection in comparison, is the process of gathering data from existing sources such as institutional documents and government-commissioned reports on the sector. Secondary data sources include government reports, academic journals, news articles, and publicly available data sets. Secondary data is data that has already been collected and analysed by other individuals or organizations and is readily available for use. Advantages of secondary data collection include cost-effectiveness, time saving and the availability of a large amount of data. Secondary data is often readily available and can be obtained quickly and inexpensively making it an attractive option for researchers with limited budgets or tight deadlines. Furthermore, secondary data sources often contain a large amount of data which can provide a comprehensive overview of a research topic and support the researcher's analysis. However, secondary data sources may not be directly relevant to the research objectives and may not provide the specificity or detail required for the research project. Secondary data collection was not adopted for this research due to limited knowledge and appreciation of the topic

Having ascertained that the most appropriate data collection method would be primary, the researcher chose a multi-method qualitative methodology that commenced with an informal focus group using purposive and snowball sampling followed by an online questionnaire and then 12 semi-structured interviews, all being academics or experts. These methodological steps were taken to achieve each research objective, ensuring alignment with the research questions and overall research aim. By employing these methodological steps, this research aimed to gather detailed insights into stakeholder views, potential benefits, and readiness for adopting lean principles in HE collaborative partnerships, contributing to the overall research aim and existing literature.

The initial, informal focus group of 6 individuals was gathered through a collaboration of colleagues that worked over three institutions but had a wealth of knowledge and insight into University politics and bureaucracy but also had a significant understanding of the benefits of a lean approach to process improvement. This first step in the data collection process was to help gain momentum with ideas around who to include in the research, what types of questions to ask but also to guide the best direction of the data collection itself. Gathering data that was rich in detail but also meaningful in terms of adding value to the possible outcome, was the ultimate goal. Focus group discussions are commonly employed as a qualitative method to gain a deeper insight into social issues and that this approach seeks to gather data from a deliberately chosen group of individuals, rather than a statistically representative sample of the wider population (Nyumba et al, 2018).

The second stage of the multi-method qualitative methodology was to conduct a number of online questionnaires sent to participants through their emails, again based on a purposive and snowball sampling approach. The participants were again selected based on knowledge and insight but also the positions held within a broader number of institutions, thus expanding the body of potential data gathered. Malmqvist et al (2019); Chenail (2011) state that the aim of a pilot study is not merely to state that it has been conducted or to validate the chosen methods without providing specific details, but its primary objective is to assess the need for refining questions or adjusting procedures that fail to produce meaningful responses or help researchers gather comprehensive data.

This very insightful stage led to the formulation of the set of questions used in the 12 semi-structured interviews. Semi-structured interviews are the ideal method for data collection when the researcher's objective is to gain a deeper understanding of the participant's individual viewpoint rather than a broad comprehension of a phenomenon (Adeoye-Olatunde and Olenik (2021). Having chosen the participants and gained verbal consent, they were

each sent a document that requested their formal agreement to participate. Times and dates were agreed and booked on a MS Teams platform. Primary data collection was then conducted by obtaining data directly from stakeholders involved in higher education (HE) collaborative partnerships through the semi-structured interviews. This method provided original data that had not been previously collected or analysed, making it highly reliable and relevant to the research objectives. The primary data collected was tailored to address specific research questions about the adoption of lean practices in HE partnerships, offering increased accuracy, relevance, and specificity. Also, to facilitate this data collection, an interview guide with open-ended questions designed to elicit detailed responses was developed. The guide covered several key areas: the current state of HE partnerships, challenges and inefficiencies, familiarity with lean practices, potential benefits of lean adoption, and readiness for change within the sector. This targeted approach ensured that the data collected was directly aligned with the research objectives.

3.10 Sampling

Sampling techniques play a crucial role in research as they determine the quality and representativeness of the data collected. Choosing an appropriate sampling method can directly impact the accuracy and generalizability of the research findings as each one has their own specific strengths and weaknesses when being used and in the circumstances under which they are most appropriate.

Random sampling, also known as probability sampling, involves selecting individuals from a population in such a way that each individual has an equal chance of being chosen. This technique is considered the gold standard in research when aiming for a representative sample. Its strengths include an unbiased selection of participants as every individual has an equal chance of being selected but also random sampling reduces the risk of selection bias, ensuring that the sample is representative of the entire population (Creswell & Creswell, 2018). This method can also provide a stronger external validity as this can provide a generalisation to the wider population (Bryman, 2016). For smaller populations, random sampling is a lot easier to implement using random number generators or tables.

The weaknesses of this however, are that it can be time consuming and costly, large populations needing to gather a comprehensive list of all individuals making it difficult to manage (Cochran, 1977). It can also be logistically challenging to create a complete list of individuals in large or geographically dispersed populations, reducing its practicality.

With stratified sampling the population is divided into subgroups or 'strata' based on specific characteristics such as age, gender, or income. Researchers will then randomly sample from each stratum to ensure that all groups are represented proportionally. The positives from this type are that it increases the accuracy of the results by ensuring that all subgroups are represented, reducing sampling error, especially when there are significant differences between strata (Saunders et al., 2016). This method also ensures that key subgroups, which might be missed in random sampling, are included in the analysis thus enhancing the depth of the findings. The negative points to this type are that it requires detailed knowledge of the population to create relevant strata and this process can be time-consuming and complex (Flick, 2015). If the population characteristics are not well understood or if there are too many subgroups, it can be challenging to implement stratified sampling effectively.

Cluster sampling involves dividing the population into clusters, often based on geographic location and then randomly selecting entire clusters for inclusion in the sample. This method is commonly used in large populations. Strengths include cost effectiveness whereby cluster sampling reduces costs as it focusses on specific areas or clusters rather than randomly selecting individuals from the entire population (Babbie, 2020). It is also particularly useful when the population is widely dispersed or when conducting surveys across large geographic regions (Hinton et al., 2014). Weaknesses however, include the risk of sampling error if the clusters are not representative of the overall population as this may introduce bias or sampling error (Fowler, 2013). Compared to other probability sampling methods, cluster sampling often results in higher sampling error because the clusters themselves may vary considerably in their characteristics.

In systematic sampling researchers select individuals at regular intervals from an ordered list. For example, every 10th person on a list might be chosen to participate in the study. Systematic sampling is relatively easy to implement especially when working with large populations (Tashakkori & Teddlie, 2003). This method ensures an even distribution of the sample across the population which can be beneficial when population characteristics are evenly spread. If however, there is a hidden periodic pattern in the population that coincides with the sampling interval, systematic sampling can lead to biased results (Trochim, 2006). This type of sampling relies on the availability of a well-organized list of the population which may not always be feasible.

Convenience sampling is a non-probability sampling method where researchers select participants who are easily accessible. This approach is frequently used in exploratory research. This type of sampling is simple and inexpensive, making it suitable for preliminary or exploratory research (Patton, 2015). It is often used for initial testing or pilot studies where researchers seek to understand broader trends before conducting a more in-depth and narrowed analysis. Since participants are selected based on convenience rather than random selection there is a high risk of bias, limiting the generalizability of the findings (Maxwell, 2013). The sample may also fail to represent the wider population, weakening the validity of the conclusions drawn.

Purposive sampling is when participants are chosen based on specific characteristics or criteria relevant to the research question. This method is often used in qualitative research to gain in-depth insights from knowledgeable participants. Purposive sampling allows researchers to focus on individuals who have the most relevant information for the study, enhancing the depth and richness of the data (Palinkas et al., 2015). This method is particularly useful for studying specialised or hard-to-reach populations (e.g., experts in a field or people with specific medical conditions). The downside to choosing this type of sampling however, is that the reliance on researcher judgment can introduce bias as the sample may not be representative of the broader population (Flick, 2015).

Snowball sampling is more commonly used to reach hidden or hard-to-reach populations. Initial participants refer others from the same population, expanding the sample over time. Snowball sampling is particularly useful for studying populations that are difficult to access, such as drug users or criminals (Goodman, 1961). By using initial respondents to recruit others, snowball sampling reduces the costs and time associated with locating participants (Atkinson & Flint, 2001). Since participants are recruited through referrals, there is a risk that the sample will be biased towards individuals with similar characteristics thus reducing representativeness (Heckathorn, 2011). The success of snowball sampling relies heavily on the initial participants' willingness and ability to refer others which can limit sample size and diversity.

Quota sampling involves selecting participants based on specific characteristics or quotas to ensure that subgroups are represented proportionally. Similar to stratified sampling, quota sampling ensures that certain subgroups are represented in the sample making it useful for studies focusing on specific demographic groups (Bryman, 2016). Researchers also have more control over the sample allowing them to ensure that key demographics are included. Because quota sampling is a non-probability method it can introduce bias if participants are

not selected randomly within each quota (Tashakkori & Teddlie, 2003). Similar to purposive sampling, findings from quota sampling may not be applicable to the general population due to non-random selection.

Each sampling technique has its strengths and weaknesses, and the choice of method depends on the research question, population characteristics, and practical constraints. Probability-based methods like random and stratified sampling offer high generalizability but can be costly and time-consuming. Non-probability methods like convenience, purposive, and snowball sampling are more cost-effective but may introduce bias and limit the ability to generalize findings. Researchers must carefully weigh these factors when selecting the most appropriate sampling method for their study.

This study utilised purposive snowball sampling techniques to select participants. A purposive sample refers to a group selected based on specific characteristics that are relevant to the objectives of the study (Andrade, 2021). Snowball sampling is a respondent-driven technique commonly used in Social Network Analysis (SNA) to access hidden or hard-to-reach populations (Illenberger and Flötteröd, 2012). In this method the researcher relies on initial respondents to identify additional individuals within the target group of the network analysis. This approach necessitates that researchers have prior knowledge of key 'insiders' within the population before commencing data collection (Atkinson and Flint, 2001).

The researcher was in the fortunate position to be working with several university partners and internal academics ranging from module link tutors through to Head and partnerships and even Vice Chancellors. As part of this privilege the researcher was also able to build rapport, collegial partnerships and even friendships. The researcher has been working with the collaborative partnerships for a number of years in some cases as long as 13 years. Within this period of time common academic interests have been developed along with discussions around joint research projects with members of key faculties within the university partners themselves, often initiating meetings and conversations to share research interests. It was these academic interests and personal interests that led to this particular topic being chosen and knowing that a number of colleagues would be interested to support this.

Table 2: Sampling criteria for Focus group

Table 3: Sampling criteria for Focus group

Role or experience	Participant code
Industry expert / professional	RM – Southwest London
Lean / Agile experience	RC – Central London
Senior academic within partnership	CW – Southern Coast of England
Academic with lean understanding	VM - Scotland
Administrative role holder	EAI – Southwest London

Table 2 above shows the criteria used for selecting the five participants that would form part of the initial informal focus group (purposive sampling). Purposive sampling was employed to select the 5 participants as part of an informal focus group who met inclusion criteria and who could contribute to theory development. The reason for choosing purposive was to ensure that the participants would have a collective appreciation of the topic area but also, they had both the experience and knowledge of their institutions historical approach to change. This rationale proved to be the correct choice as those selected had been working in HE for a considerable length of time so were able to express and provide rich insights. As the chart shows the criteria in the left-hand column identified both the role that the participants should ideally have but also the experience as an alternative. If one instance a chosen participant satisfied both criteria which led to very rich data but also suggestions for additional participants that would support the purposive snowball sampling option. Identification of these participants selected was then formed as part of the participant code shown in the right-hand column of the chart. As the chart shows, there is a coding used to signify the participant but also the location of the university campus where the participant was based in order to participate in the informal focus group. Having a full set of data sources as an initial starting point is referred to as a sampling frame (Sedgwick, 2013).

Subsequently, snowball sampling identified an additional 9 participants recommended by the initial 5 to take part in a further pilot study. Similar to the rationale for the purposive strategy mentioned previously, snowball sampling was intended to gradually but selectively increase the participant numbers, but in a way that would build on the scaffold already established whilst still providing a wealth of rich data without diluting what had already been gathered. Applying the snowball sampling method in this way would enrich the survey samples (Kennedy-Shaffer, 2021). This was established to examine the impact of the pandemic on Higher Education in 2020 and how this led to a rapid and ad hoc implementation of lean and agile actions across all of the collaborative partners. More explicit detail of this is highlighted in chapter six of this thesis. Moving forward from the snowball sampling, 12 participants for

the semi-structured interviews were identified. The criteria used for this is shown in table 4 of this chapter, again wanting to develop on the progress so far, the participants were selected based on location and job role. This was to ensure that a wider spread of opinion and answers were elicited, also accommodating staff working across the university partners to get a more varied response. After interviewing the 12 participants the data was examined to assess support for theory development.

Purposive sampling is a non-probabilistic sampling technique in which the researcher selects participants based on specific criteria thus creating a better match of the sample to the aims and objectives of the research, ultimately improving the rigour of the study and trustworthiness of the data and results (Campbell et al, 2020). For example, a researcher studying the attitudes of people towards a new policy might use purposive sampling to select participants who have a strong opinion on the policy. Purposive sampling is useful when the researcher is interested in a specific subgroup within the population, but it can introduce bias and limit the generalisability of the findings. There are several different sampling techniques as mentioned earlier in this chapter, each with their own individual characteristics, strengths and weaknesses but the ultimate choice of sampling technique used will depend on the research question and the population being studied. Researchers must carefully consider the benefits and limitations of each technique to ensure that their sample is representative of the population and that the findings are generalisable to the larger population. The key to successfully achieving the research objectives in this thesis was based around the participants used, their selection criteria and the ability to elicit rich, in-depth detail through the multi-method qualitative data collection.

‘Qualitative research uses rich descriptions to deepen our understanding of concepts and relationships, and thus generalizability to a population is not a guiding principle’ (Knechel, 2019 p333). The sample size adopted for this research could not be widespread as the aim, objectives and research questions were more focussed on specifics rather than generic. Other options for sampling were considered such as convenience or random but these could not offer the required outcomes, convenience having the potential for a high risk of bias and random, whilst having the advantage of offering an unbiased selection of participants, the process of creating the list of individuals in such a large population can be logistically challenging. Choosing a purposive snowball method was seen as the most advantageous method to gather data for this research as it offered the ability to hand-pick who was involved in the early stages and throughout the remainder of the data collection period.

This qualitative grounded theory study focused on academics and experts based in the north, centrally and in the south of the UK, all having varying degrees of knowledge or understanding of Lean and Agile, some having applied these two philosophies, others having basic awareness of their benefits. Determining an appropriate sample size in qualitative research is often debated, with this research aiming to gain a consensus, the sample sizes should be small. Vasileiou et al, (2018, p2) suggest that 'qualitative samples are purposive, that is, selected by virtue of their capacity to provide richly-textured information, relevant to the phenomenon under investigation'. For grounded theory studies, researchers typically recommend 20 to 30 interviews. However, Thompson (2011) alludes to the fact that Grounded theory has become one of the most frequently used qualitative methods, LaRossa (2005) arguing that, whilst grounded theory can be exhilarating it can also be very challenging due to understanding its procedural nature, specifically the sample size and validity. Data saturation, a concept derived from Grounded Theory, originates from the idea of 'theoretical saturation' (Tay, 2014). According to Morse (2004) this concept refers to the point in qualitative data analysis where the researcher has continued sampling and analysing data until no new information emerges and all theoretical concepts are fully developed with clear connections to other concepts, this being the point at which data collection can stop. This idea was introduced by Glaser and Strauss (1999) as a key element of the constant comparison analysis method (Malterud et al, 2016) and is based on the assumption that when no further similarities or differences are found, there is no need to continue collecting data. The aim of this study was to achieve the data saturation point through the multi-method qualitative approach, firstly by initiating the focus group to create thoughts and ideas that could then be passed forward to the pilot study. This second stage then attempting to expand on data collection but also the generation of additional perspectives around the topic area. The third and final stage was the semi-structured interviews, the questions within these being an accumulation and consolidation of thoughts and ideas gathered from all participants to this point through all of their respective interactions. As previously mentioned, the aim of this was to then achieve the data saturation point whereby the data collection could cease.

Bonde (2013) alluded to the following five factors that influence the researcher's decision to cease any further data collection and ultimately reach data saturation:

1. **Scope of Investigation:** This includes the nature of the study, the research question, the complexity of the phenomena being studied, and the method of data collection (focus groups often require fewer interviews to reach data saturation compared to other methods).

2. **Sample Homogeneity and Participant Experience:** If the participants are more homogeneous and have greater experience in the research topic, fewer interviews may be necessary to achieve saturation. In contrast, a more diverse or less experienced group may require more interviews.
3. **Researcher Expertise:** The skill and experience of the researcher conducting and analysing the data can also play a crucial role. More experienced researchers generally require fewer interviews and reach saturation faster since they are better able to interpret and analyse the data (Denzin & Lincoln, 2003; Miles et al 2014).
4. **Resources for Qualitative Research:** The availability of time, budget, and participant access can significantly impact the number of interviews conducted. When resources are limited, researchers may opt for a smaller sample size and fewer interviews to reach saturation.
5. **Audience Expectations:** The expectations of those evaluating the research also influence decisions about sample size and data saturation. Qualitative researchers may expand their sample size and conduct more interviews to meet the expectations of quantitative researchers who are used to large samples. Bonde (2013) noted that there is no fixed method for determining when data saturation is achieved, as it depends on a combination of these factors.

3.11 Data quality and analysis

3.11.1 Data quality

The purpose of qualitative research is to understand a specific social situation, event, role, group, or interaction (Creswell et al, 2000). To interpret social phenomena effectively, qualitative research should employ methods such as credibility, specific criteria, and persistent observation when relevant (Rose and Johnson, 2020). Validity, defined as the correct inference or deduction from a premise (Esterling et al, 2023), is crucial in qualitative studies. Case studies are particularly effective in ensuring high levels of validity by accurately representing theoretical concepts and their measurements. In this research thesis key variables such as understanding of lean and agile, experience of application, adaptation of lean, and benefits of lean are inherently difficult to measure. Therefore, it is essential to gather detailed and sufficient data to capture the characteristics and elements that establish the validity of the study. This is achieved in this thesis through the collection of ample data, notably from participants who have knowledge, experience and understanding of lean and agile within a product or service context.

Validity in research refers to how accurately a method measures what is intended to be measured and can be divided into three types: construct, internal, and external. Construct validity refers to the measures used to validate tests. Internal validity pertains to the cause-effect or causal relationships identified in the study. The measuring instruments for this research were a focus group, surveys and semi-structured interviews. All were of a qualitative nature and by using a combination of academics and experts who were geographically dispersed across a number of institutions, the researcher felt that the measures required would provide an accurate reflection. In addition, using the purposive snowball data collection method enforced the internal validity as each phase of data collection led to the instruments and methods of the next thus informing, adding strength and reassuring the outcome.

External validity refers to the degree to which the findings and conclusions drawn from a study's sample can be generalised to a broader population or other target groups (Findley et al, 2021). In recent years scholars with a focus on methodology have increasingly addressed various aspects of external validity, leading to a range of new insights. Referring back to the multi-method qualitative data collection, the outcomes of this study would be representative of academics and experts across a geographically dispersed area and from a number of institutions thus achieving generalisation.

Reliability, often associated with quantitative research, is applicable across all forms of research. It relates to the consistency of results over time and whether they accurately reflect the entire population under study. Moreover, reliability concerns the reproducibility of results under similar methodologies (Joppe, 2000). In qualitative research however, ensuring reliability requires trustworthiness which is essential for demonstrating that the findings are dependable and consistent.

Data quality is a critical aspect of both quantitative and qualitative social research as it plays a key role in establishing the credibility and accuracy of findings, thereby maintaining the robustness of research outcomes (Kaplan, 2004). The quality of data is often assessed through the two interrelated concepts of validity and reliability (Saunders et al., 2009). Validity, in particular, refers to the accuracy of the research and concerns the extent to which the concept being measured aligns with reality or social truth (Bryman and Bell, 2015). It is fundamentally linked to assessing the precision and relevance of research outcomes and is essential in ensuring the integrity of the findings (Saunders et al., 2009). As a result, validity

is regarded as the most significant indicator of research quality, determining how well the findings can be generalised.

Data source triangulation is a method to increase both validity and reliability (Moon, 2019) by placing greater emphasis on gathering data from diverse sources within a single data collection method to ensure a more comprehensive understanding of the subject. In this study the use of handpicked academics and experts as part of the focus group, surveys and interviews to examine the consensus of applying a lean philosophy captured a well-rounded perspective, thus achieving validity and reliability whilst enhancing the depth and reliability of the findings.

3.11.2 Data analysis

Data analysis was conducted using thematic analysis, which involved coding interview transcripts to identify recurring themes and patterns. This method facilitates a comprehensive understanding of stakeholder perspectives on lean adoption in HE partnerships (Creswell, 2017). The systematic coding and analysis using NVivo 14 led to the identification of several key themes related to the adoption of a lean approach in HE partnerships. These themes are shown in table 3 below along with their respective links to the objectives and research questions:

Table 4: Linking themes to the objectives and research questions

Objective	Research Questions	Themes from the data collection
1. Identify similarities and differences in stakeholder views on HE collaborative partnership improvements	How do stakeholders perceive the need for improvement in HE partnership processes, and is there a consensus?	Lean and Agile not being a new concept to the participants and in some cases the participants had actually used the tools and techniques of lean Change should be more of a focus in Higher Education Processes should be constantly reviewed with the aim of improvement

Objective	Research Questions	Themes from the data collection
		There are significant amounts of information in constant exchange between collaborative partners but with little apparent regard for streamlining this and increasing efficiencies Inefficient and waste of time, repeated emails and other forms of correspondence, duplication of messages
2. Establish consensus on adopting a lean approach to information exchange	How can a lean approach enhance information flow in HE partnerships, and what are the specific benefits?	Lean and Agile not being a new concept to the participants and in some cases the participants had actually used the tools and techniques of lean Change should be more of a focus in Higher Education Processes should be constantly reviewed with the aim of improvement Identify the correct process stakeholders and /or owners and get them involved There are significant amounts of information in constant exchange between collaborative partners but with little apparent regard for streamlining this and increasing efficiencies Inefficient and waste of time, repeated emails and other forms of

Objective	Research Questions	Themes from the data collection
		correspondence, duplication of messages
3. Examine the benefits of adopting lean practices in the HE sector	How can a lean approach enhance information flow in HE partnerships, and what are the specific benefits?	Lean and Agile not being a new concept to the participants and in some cases the participants had actually used the tools and techniques of lean Identify the correct process stakeholders and /or owners and get them involved Inefficient and waste of time, repeated emails and other forms of correspondence, duplication of messages
4. Explore readiness for change within the HE sector	How prepared is the UK HE sector to integrate lean principles in partnership processes?	Change should be more of a focus in Higher Education Processes should be constantly reviewed with the aim of improvement Identify the correct process stakeholders and /or owners and get them involved

According to Williams and Moser (2019) Grounded theory was among the initial qualitative methods that offered a systematic approach for coding and categorising data in order to generate theories, ultimately using open, axial, and selective coding. This method of coding helps support researchers gain access to participants thoughts, perspectives, and reactions. The analysis process also included reading the transcripts several times whilst making notes (Al-Eisawi, 2022, Corbin & Strauss, 2015). Mohajan and Mohajan (2022) state that note taking is an integral part of grounded theory, allowing researchers to make continuous comparisons, investigate their codes, and identify patterns (Charmaz, 2008). The repetitive

process involved analysing the first few transcripts before moving to the remaining ones. This method helping to identify responses that may have required further elaboration or unexpected outcomes. Additionally, and in most cases, the informal focus group was able to help suggest and refined the interview questions in such a way that mitigated the need for any additional probing questions.

The iterative process began with reading and analyzing the first few transcripts before proceeding with the rest, allowing researchers to identify areas needing further elaboration and any unexpected findings. The initial informal focus group was instrumental in refining interview questions, eliminating the need for additional probing. A codebook was developed to categorize concepts and aid in identifying corresponding information within the text. The researcher utilised NVivo 14 software to code the interview data, an essential tool for qualitative research, enabling the iterative analysis of emergent data through coding and review of relevant literature to uncover explicit and implicit themes. The coding process involved open, axial, and selective coding, which are considered part of the grounded theory coding framework, as described by Saldana (2015). Open coding, or initial coding, involves breaking qualitative data into smaller units to explore for similarities and differences (Corbin & Strauss, 2015; Saldana, 2015; Vollstedt & Rezat, 2019). This method kept the researcher open to all potential theoretical directions and helped identify participant terms during the open coding phase. Axial coding was used to reorganize the codes, eliminating redundancies and selecting the most representative ones. This phase extends the analysis of open coding and acts as a transitional step toward selective coding, with concepts emerging from the codes (Qureshi & Unlu, 2020). Selective coding, also known as theoretical coding, was then applied to develop categories from the concepts identified in axial coding. Through this process, the researcher synthesized these categories and concepts into themes that contributed to the development of a grounded theory explaining the data, including unexpected or novel findings. Luca et al (2022) state that Grounded Theory research has a point of saturation whereby no new data emerges that could alter the analysis. Lillemor (2006) explains that the collection of data continues until saturation is achieved, this meaning that any new data does not add new information to the research.

3.12 Justification of approach

As highlighted in chapter one, the aim of this research is not to seek answers to the question of how to apply a lean approach to the collaborative process of information exchange but to gain a consensus that improvement is required and that a lean approach could be an option. In order to gain this consensus, the methodology chosen had to facilitate access to staff

within the private educational institution but also staff who are placed within the collaborative partnerships themselves.

One of the key factors to mention here is that administration staff play a key role in the exchange of information on both sides of any collaboration so their input is invaluable. In addition to administration staff other key members who could support this research were those at various levels of the organisations but also who had different roles and responsibilities within the partnership therefore a wider, more holistic and varied outcome of opinion could be gathered.

The driving force for this research was to gain an understanding and interpretation of how the stakeholders within these processes of information exchange viewed what was currently happening and how strongly they felt towards change (Fig 2). For this reason the philosophes chosen were two fold. Firstly an interpretivism approach was deemed suitable as the need to examine thoughts and ideas was evident but also to make sense of any possible commonalities or themes that may emerge. The second philosophy chosen was the pragmatic approach as a practical outlook was required to appreciate all points of view in a heavily human process driven environment.

The need for stakeholder thoughts, opinions and ideas led this thesis to adopt an inductive approach of qualitative data collection that could shape some form of theoretical framework. In order to achieve this, it was felt that the most suitable method for data collection would be that of semi-structured interviews with a content analysis that would also allow a consensus to be identified.

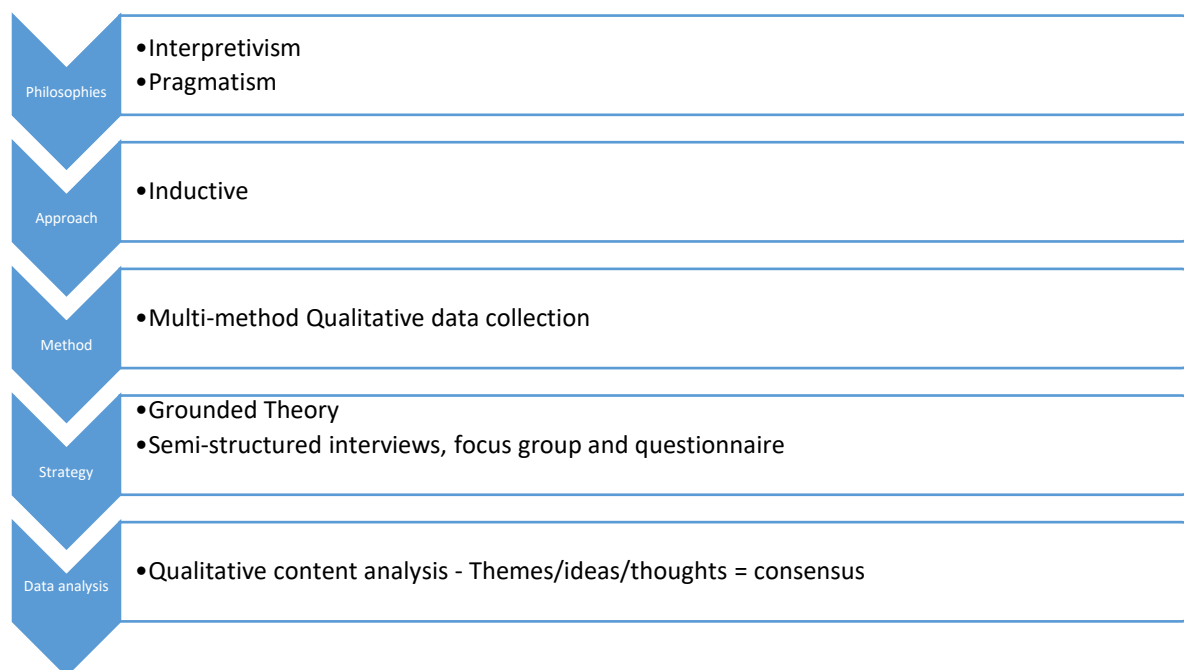


Fig 3: Methodology process

3.13 Participants

A total of 12 participants were chosen to conduct the semi-structured interviews which consisted of a mixture of academics and professionals. The approach was to ensure that a broad set of participants were interviewed across numerous levels and roles but also across as many collaborative partnerships as possible. Having access to multiple partnerships, the choice of four specific ones was made as these covered a wider geographic area but also encompassed areas where levelling up initiatives were present thus giving another element of opinion in terms of the roles that could result from expansion of such collaborations. The table below (Fig 3) details the participants in terms of their roles and geographical location. Participants were chosen specifically for their role within the partnerships but also for their level of involvement within the processes that encompassed the operational elements of the partnerships.

Table 5: Interviewee details

Participants	Role	Location
1 - Partnership	Manager / Senior Academic (previously – industry expert and practitioner in Lean)	South-East based main campus. University 1
2 - Partnership	Manager / Senior Academic	Midlands based partner. University 1

3 - Partnership	Manager / Senior Academic (Also a collaborative link tutor)	South-East based main campus. University 1
4 - Partnership	Manager / Senior Academic	South-East based partner. University 2 and 5
5 - Partnership	Manager / Senior Academic	South-East based partner. University 3
6 - Partnership	Manager / Senior Academic	Midlands based partner. University 4
7 – Registry Team	Partner Management Team - Administration	Midlands, North and South-East
8 – Partnership	Head of Partnerships	South-East based partner. University 1
9 – Partnership	Manager / Senior Academic	South-East based partner. University 4
10 – Registry Team	Partner Management Team - Administration	Midlands, North and South-East
11 – Administrative support	Partner Management Team - Administration	South-East based main campus. University 1
12 – Academic Registrar	Partner Management Team	Midlands, North and South-East

Administration roles are the key to this operational element as they control the day to day input of data, ensuring that data integrity is maintained whilst consistency and accuracy are achieved. Partnership and Programme managers offer another insight as they are the ones responsible for the running of the collaborations with a focus on the overall student experience. This also includes the monitoring and reporting of student engagement, submissions, attainment and progression whilst ensuring that retention targets agreed with the partners are achieved. Having access to these collaborative partnerships allowed early contact to be made with the potential participants and offer detail of the proposed data collection and rationale for the research. In all cases this was received exceptionally well and on two occasions, offers of future collaborative research paper writing was made.

Once the overall acceptance of cooperation was established a document was sent to all participants (appendix 1) offering an overview of the research, including the aim, interview schedule, the questions being asked in the interview and a consent form as required. The participants were then contacted by email to arrange and confirm dates and times that each interview would take place. The process started at the beginning of August 2022 and was completed by the 12th September 2022. All interview were recorded and transcripts generated using the function within Microsoft Teams.

3.14 Interviews

Although there are a number of ways in which interviews can be conducted, this study chose the semi-structured approach as this allows more freedom for the participants to offer in-depth personal thoughts, opinions and overall knowledge of the topic whilst also giving the opportunity to promote their own ideas. The decision to conduct semi-structured interviews was also influenced by the research objectives and questions and were facilitated using Microsoft Teams as the platform. The reasons for using Microsoft Teams was its ease of access for each of the participants whilst being time and cost effective. In addition to this it also allowed for transcription and recording of the interviews thus allowing examination of the content relevant to the analysis chosen.

Cresswell (2003) state that qualitative research favours the use of open-ended questioning allowing the participants to express their views in more depth, whilst Bryman (2017) argue that interviews entice rambling and going off in tangents, thus increasing the chances of this method being a nuisance. In addition Bryman (2017) also suggests that interviews can stray from the proposed guide by provoking questions that emerge from answers and thus detract from the original flow. Mason (2002) however, dispute the claim by Bryman arguing that the exchange of dialogue in an interview allows for a greater contextualisation of the topic, thus promoting a more in-depth conversation that leads to varied topics and themes surfacing. Choosing an interview sample size for any qualitative approach is not always straight forward but will ultimately be guided by the design and nature of the research as well as the aim, research questions and the philosophical choice (Edwards and Holland, 2013).

The semi-structured approach for this study was guided initially by a 1 hour duration maximum. The questions were trialled beforehand on colleagues within the institution to establish how the questions would be interpreted but also if they were clear enough to be answered without any ambiguity. This pilot was also useful to gauge the time taken and the type of detail offered so that any changes or amendments to the questions could be made prior to the actual interviews. The format of the questions also allowed for a degree of flexibility within the answering of them and this too was allowed for in terms of the timing allowed. If any of the questions were still not clear enough then further clarity was offered to help provoke and extract as much detail as possible.

3.15 Ethical Considerations

This research has focussed on maintaining an ethical approach and consideration throughout the process ensuring that all participants are fully aware of the process and the part they were asked to play in the data collection phase. Research ethics is seen as a crucial component within any social science research and is referred to as the manner in

which the researcher behaves throughout the process. This manner must take into account the rights of any participants as they are the subjects of the research itself and as such, ethical protocol should apply throughout. As participants the practices around informed consent, anonymity and prevention of any harm should always apply. At Doctoral level the conduct of any research is facilitated and guided by the university ethics committee and their respective policies and guidelines.

The researcher followed the Birmingham City University ethical guidance, considering the main ethical principles of the participants as volunteers, the requirement for an informed consent, ethical standards relating to the harm of any participants, complete confidentiality of all participants and the respective information offered by each person as well as remaining anonymous at all times. An informed consent form was given to each participant in addition to the interview questions prior to the actual interview. This allowed the participants to consider their involvement in the research but also to examine the questions and prepare answers thus limiting the time spent for each interview. The interviews were arranged to take place at the most convenient day and time for each participant and were conducted over MS Teams so that transcripts could be gathered throughout each one. The transcripts have been saved on a password protected hard drive and will remain there for 10 years as per the data storage guidance of the University.

3.16 Chapter Summary

In this study, a qualitative methodology was selected, specifically a grounded theory approach, to research the consensus of whether a lean philosophy could be implemented within the information exchange process of collaborative partnerships, specifically in a Higher Education setting. A grounded theory approach was chosen because it supports the possibility of new concepts and theories being discovered through participants' experiences and perspectives.

In order to collate the required data, an informal focus group was initiated through purposive sampling. The aim of this group was to design and agree on interview questions that would later form part of semi-structured interviews as part of the qualitative data collection. These questions were designed to thoroughly explore participants' experiences and perceptions regarding the application of lean into HE collaborative partnerships. Purposive and snowball sampling techniques were used to identify and select 12 participants for the interviews.

Data analysis was performed using open, axial, and selective coding to identify themes. A repetitive approach ensured that all aspects of the data were considered, and emerging themes were explored in depth. The grounded theory method was applied to generate theories from participants' descriptions of lean within a HE setting.

Overall, the study's methodology and data collection and analysis approaches were specifically chosen to ensure the reliability and validity of the findings. The grounded theory approach supported the development of a theoretical framework, contributing to the existing knowledge within this area.

Chapter Four: Analysis and results

This chapter presents the analysis and findings derived from the data collected through the informal focus group, online questionnaires and semi-structured interviews. The purpose of this chapter is to address the research questions by exploring key themes and patterns that emerged during data analysis. The chapter is structured around the core themes identified in the data, each of which is examined in detail to provide insights into how Lean practices might be adapted for higher education partnerships.

4.1 Introduction

This section outlines the discoveries of the research which were acquired using a grounded theory methodology through semi-structured interviews with academics and experts from a number of university partners. The objective was to elicit the overarching understanding and appreciation of Lean but also to gain a clearer picture of how, using this approach, an adaptation of such a series of tools and techniques might be used to initiate change within

the context of educational collaborations. Moreover, Nvivo 14, Microsoft word and excel were used to categorise the key themes and concepts emerging from the interviews, thus enhancing the coherence and organisation of the findings. The findings of this research offer valuable insights into the consensus of both academics and experts that change is needed as part of any overarching reform in the HE sector but also the significance of Lean tools and techniques and the part they could play in such a reform.

4.2 Interview analysis

In order to improve understanding and gain a consensus of how much was known about the philosophy of Lean, agile and its tools and techniques, 12 individuals were invited to take part in the study. Whilst this number of participants may seem small, the depth and richness gained from such a sample was quite significant “samples in qualitative research tend to be small in order to support the depth of case-oriented analysis that is fundamental to this mode of inquiry” (Vasileiou et al, 2018, p2). Among those invited, all 12 responded affirmatively and agreed to be part of the research. Each participant was sent details of the interview schedule along with the research focus and the interview questions. Subsequently, the researcher conducted a series of 12 semi-structured interviews with industry academics and experts from university partner institutions as shown in table 5 below:

Table 6: Participant roles, location and code allocated

Participants	Role	Location	Code
1 - Partnership	Head of Partnership (previously – Aerospace industry expert and practitioner in Lean and Agile)	South-East based main campus. University 1	SE1
2 - Partnership	Programme Manager (industry expert)	South-East based main campus. University 1	SE2
3 - Partnership	Associate Dean (Also a collaborative link tutor)	QAHE University 1	QA3
4 - Partnership	Manager / Senior Academic	Southern based partner. University 5	SB4
5 - Partnership	Manager / Senior Academic	South-East based partner. University 3	SE5
6 - Partnership	Manager / Senior Academic	Midlands based partner. University 4	MB6
7 – Registry Team	Partner Management Team	Midlands, North and South-East. University 3	MN7

8 – Partnership	Head of Partnerships	South-East based partner. University 1	SE8
9 – Partnership	Manager / Senior Academic	Southern based partner. University 2	SB9
10 – Registry Team	Partner Management Team	QAHE Midlands, North and South-East	QA10
11 – Administrative support	Partner Management Team	Southern based partner. University 2	SB11
12 – Academic Registrar	Partner Management Team	QAHE Midlands, North and South-East	QA12

The findings depicted in Fig 3 below illustrate that every participant engaged in this research has shown an appreciation of the Lean and Agile philosophy as well as the recognition of its association with change. Moreover, a considerable number of these individuals have also displayed a noteworthy acquaintance with the principles of lean and how it has been used in other industries and sectors. Additionally, three participants (25%) had achieved an expert status through using the tools and techniques of Lean and Agile in previous employment, three (25%) expressed familiarity in the use of Lean whilst six (50%) had a basic understanding of what Lean was and its association with continuous improvement.

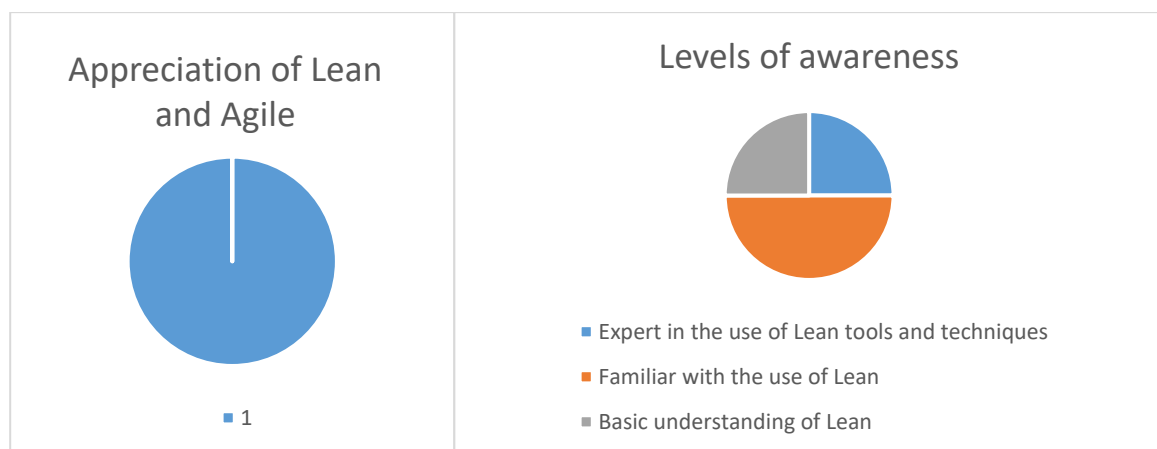


Fig 4: Appreciation of Lean and Agile and the levels of awareness

Throughout the interviews, it became evident that the majority of participants emphasised the pivotal role that Lean could play in facilitating change within any HE institution or collaborative context. They also underlined various critical points of view with current practices and procedures, on occasion referring to the operational elements of HE as still having a “pre-internet mindset” (SE2) with little motivation to change. This perspective aligns with that of Blanco-Portela et al (2017) suggesting that these barriers to change include group culture, bureaucracy and lack of commitment. This comment was also made in

reference to the comparison of how the Universities have hugely varied ways of data collection, integrity, presentation and exchange when taking results to an exam board. MN7 supported this by explaining that their University still uses physical paper-based 'broad sheets' (spreadsheets showing all students and their respective grades for each module). Williamson (2018) expressed an opinion around how government priorities have led and are still pursuing the granular data about students, this now being enforced as a key resource for demonstrating the performance measurements of universities, faculties, courses. Moreover, many interviewees also stressed the importance of change in establishing and maintaining the integrity of collaborative partnerships and the data sharing that forms a key part of any such arrangement. They asserted that Lean tools and techniques could significantly contribute to enhancing the efficiency of data collection and exchange within the governance of any HE partnership. Nonetheless, several interviewees also highlighted the challenges that HE collaborative partnerships might encounter and stressed the readiness of the sector, this supporting the reference made in chapter two whereby Tierney (1999) stated that institutions with rigid, hierarchical governance structures often struggle to adapt to new demands and external pressures.

Through the literature included in previous chapters and the themes drawn from the interviews, a framework has been established enabling the analysis of the findings. As shown below in Fig 4 the framework includes components that highlight the themes elicited through the interviews, each having significant impact on the success factors of the implementation of lean and agile into the HE sector.

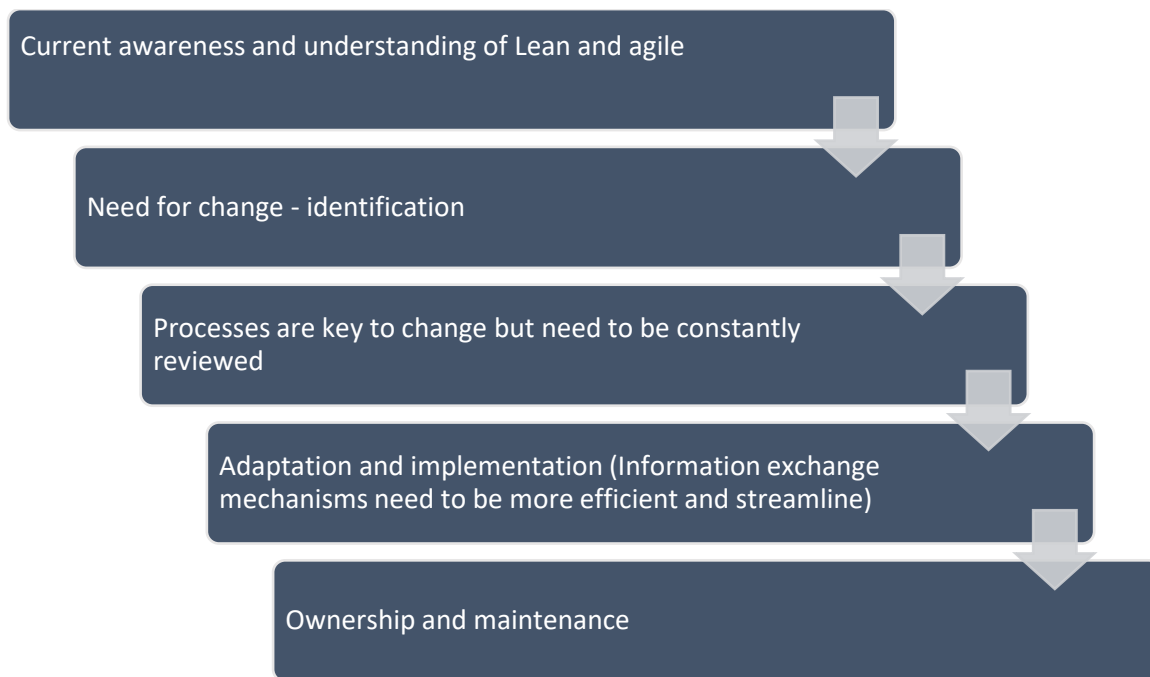


Fig 5: Analytical framework

4.3 Themes identified from the data collection

4.3.1 Theme 1: Lean and Agile not being a new concept to the participants and in some cases the participants had used the tools and techniques of lean

The basis for this research was to gain thought and insight into a topic that holds potential for improving processes within Higher Education and in particular, collaborative partnerships. The starting point for this was to gain access to a suitable group of individuals who would support the research, ideally selecting those who may have some knowledge and understanding of Lean. Lean being a philosophy that adopts several tools and techniques, the participants chosen were ones who, not only had knowledge of these philosophies but, in some cases, had used the tools and techniques as part of a change process. As Lean is often intertwined with agile, the initial questions within the interviews sought to find levels of awareness and understanding of both these terms. As each interview progressed, the varying levels of awareness and understanding emerged, much to the delight of the researcher, QA10 stating that “based on my understanding of lean, it's about having efficient and effective processes that seek to avoid waste stages”.

As stated in chapter three the initial informal focus group was, not only able to support the formulation of questions that were then incorporated into the semi-structured interviews, but

also to help identify participants that would offer a rich mixture of opinions, thoughts, ideas and experience. Choosing participants who knew little or maybe nothing at all about lean or agile would not have supported this research in a way that would offer benefit or add value. Therefore, participants were selected based on purposive sampling to support the aim of this research and achieve the overall outcomes required. Having knowledge and maybe even previous experience of actually applying lean or agile in a working situation was the reason for choosing this sampling method. The first theme emerging was relevant as it linked to both research question one and objective one. Needing to identify similarities and any differences in stakeholder views was important to this research as this would determine the consensus required for objective two. The aim of this would be to evaluate how deep the knowledge was and if this would hopefully then suggest if a lean approach could be adapted. Only by having a reasonable degree of knowledge or better still, first-hand experience of its application and use would this evaluation achieve the desired outcome.

As found throughout the interviews, all participants had heard of lean and its benefits, "getting there as efficiently as possible, so that you're achieving exactly what you want, but you're doing it with, you know, as cheap as possible or as few people as possible or as few kind of elements to a process as possible" explained *SB11*. This came through as a strong understanding but in a production context more so than a service or educational one. Upon analysing the information gathered during the interviews, it can be confidently asserted that the majority of the interviewees had a clear awareness and understanding of what Lean was but also the implications with implementing such a philosophy into the processes that drive, not only internal HE institutions but the collaboration between mainstream universities and private providers. The interviewees agreed on the importance of reform and especially improvement within the HE sector and its collaborative partnerships, *SE8* stating that:

"Perhaps the existing universities might be slightly different to a privately owned or separate, commercially oriented college such as yourselves. But I see the traditional HE sector as anything but lean. I see it as being incredibly bureaucratic"

Interviewee *QA3* underscored the significance of being aware of how lean could hold potential as "essentially critical in my organization, and frankly, any organisation that has such issues with processes that are extremely time consuming". According to Interviewee *SB9* "The lean and agile methods could hold huge potential as they address the issues that we are facing on a daily basis" Additionally, *SB4* elaborated:

“Looking at how processes can be made more efficient, more streamline, a lot less activity, a lot less kind of movement of information and data and just really try and kind of streamline with more lean processes”.

Thirkell and Ashman (2014) supporting these participant quotes by stating that individuals in academic positions were generally able to offer definitions of Lean that closely matched Womack’s original concept, as mentioned in chapter two, likely due to their experiences with Lean implementation in the private sector or, in some cases, through teaching the subject.

Other interviewees recognised the importance of adopting such a philosophy within their own processes or job roles, *SB11* mentioned that “having a better understanding of how things can be improved is extremely important, in fact, within our current plans to expand, it could really help”. Similarly, *MB6* stressed that this could be “highly beneficial” for collaborative purposes to understand how the day-to-day processes and tasks could be examined and maybe prioritised as “I think the flow of information can be very clumsy, can be very disorganised, can be very repetitive”.

‘Lean thinking’, a term used more frequently over the past decade is being seen more often as a way to resolve the issues of efficiency and quality, not just in the automotive industry but more recently in higher education (Kakouris et al, 2022). *SE2* referred to this term as “lean I take to mean highly efficient and lean thinking looks at how we could view its use”. Transferring the principles and practices of lean into HE however, has highlighted mixed results and discussion around its suitability to the sector. Moore et al (2004) and Waterbury et al, (2011) make reference to there being evidence that lean initiatives actually began in Higher Education in the US in the early 2000s, further stating that there is also evidence of business process improvement activities dating further back than this. This debate therefore links closely to research question three that looks at whether the sector is actually prepared for such a philosophy and the tools and techniques that it incorporates.

Lean and Agile methodologies were both identified by participants but interestingly using additional words to expand their own personal interpretation, *SE8* defining lean as a way “to improve performance by systematically reducing or removing waste and reducing *variation*, I think that reducing variation is a really good point. So it's all about *simplification*”, *MN7* describing agile as the “ability to move quickly and easily” whilst *SB4* described lean as:

“Looking at how processes can be made more efficient, more streamlined, a lot less activity, a lot less kind of movement of information and data and just really try and kind of streamline those processes”.

There were also responses that compared project management to lean and agile, suggesting that they are two distinct, but complementary approaches used to improve processes across industries, *SE8* stating that:

“Both focus on improving efficiency and flexibility but differ in their origins, principles, and implementation strategies. Understanding the differences between the two is crucial for organisations looking to optimize workflows, minimize waste, and deliver value to customers”.

As the interviews progressed it became clear that this initial theme seemed to resonate with the participants, the ideal of lean and agile being a real possibility within Higher Education. Lean thinking, which originated from the Toyota Production System in the mid-20th century, is centred around the idea of eliminating waste and maximising value (Womack & Jones, 1996). It focuses on creating more value with fewer resources, achieved through continuous improvement (Kaizen) and the elimination of activities that do not add value to a process such as overproduction, waiting time, and excess inventory (Liker, 2004). All participants were able to express their own individual anecdotes of instances whereby they had experienced real examples of over production, excessive movement or transportation, duplication of tasks and performing activities that simply made no actual impact on the outcome of the process at all. These were clear and resounding examples of waste within their daily roles.

Objective one was aimed at identifying the similarities and differences in stakeholder views towards the need for improvement within a HE context and specifically that of the processes that form part of collaborative partnerships. The resulting analysis and findings from this initial question would indicate that the 12 interviewees had very similar views and that the foundation for this had come from their own experiences within their daily roles. They are all active participants within HE collaborative partnerships but experience these issues at varying levels from administration through to pro-vice chancellor. Through this personal exposure to the challenges and daily rigor of running Higher Educational institutions and their partnerships, an overwhelming 100% of participants agreed that change is needed in many ways and at various levels thus satisfying research questions one. Whilst the interviews examined the views and need for improvement within the processes that facilitate

the operational elements of collaborative partnerships, the overall reform of the sector came through as a very strong consensus.

4.3.2 Theme 2: Change should be more of a focus in Higher Education (identifying the need for change)

Theme two that was elicited from the qualitative data collection and analysis highlighted the opinion that change within Higher Education needs to be more of a priority and focus, *MN7* suggesting that “the first one change or improvement should always be a common focus in every organisation regardless”. *SB11* supported this opinion by stating that “we do need to change and that is essential, change will definitely be better than what we've got already”. Several other participants expressed a similar perspective that change should indeed be a primary focus, Verhulst and Lambrechts (2015) also referring to this as ‘sustainable development’ but highlighting how barriers within HEI’s have thus far limited the progress.

Research objective two was included to establish if there was a consensus around the adoption of lean, this linking strongly to this emerged theme. Participants were encouraged to reflect on their own journey within the HE sector whilst considering lean as an option to shape their own development and that of the roles they held. Initially the researcher wanted to gain confirmation around staff being true advocates of change and not merely paying it lip service. Overall, 91% of participants admitted to being true advocates of change, *SE2* stating “I sometimes annoy people by the extent to which I advocate change and improvement”. This statistic, although not 100%, did not suggest that the remainder were not interested in change at all but rather, that their roles may not have yet encountered the depth of change and improvement required to be deemed as a true advocate.

Other factors that led to this shortfall were also highlighted in chapter 2 whereby cultural resistance and the complexity of academic processes played a part by viewing lean as a threat to academic freedom and autonomy, fearing that process standardization could undermine the quality of education (Balzer et al., 2016) whilst the complexity of processes making it difficult to apply Lean principles in a uniform manner across the institution (Emiliani, 2015). Despite this, Research question one was also connected to this theme as it looked to ascertain how stakeholders perceived the need for improvement and if there was a consensus that change was needed. When asked about the need for change and if they were advocates of such a move, *QA10* stated “Yes, I would say I am an advocate of change, but not change for the sake of change, rather change for the sake of improvement”. *SB9* adding “Yeah, 100% agree. There should always be on the horizon where you look at things

and say, should we improve that? How can we improve it? And especially like you said, with the recent changes over the last few years". *SE8* elaborated even further by stating:

"Sorry I'm pausing, not because I'm questioning whether I am or not, because it seems to me that anybody who says no is a dinosaur who should be kicked out of any given organization. I mean, of course we have to be advocates of change or improvement, because if you're not, you're presuming that nothing can be changed or improved".

The questioning went on to examine if participants thought that change was needed in the current climate and if the need for change or improvement can be identified. The reason for this line of questioning was to find out if the interviewees had already considered ways in which their own jobs could be improved and if there had been some type of trigger or indicator that had led them to think in this way. Another point around this type of questioning is that all change needs to start with an initial issue or concern that helps people to identify that there is a genuine reason and need for change.

In terms of the first sub question examining if change was needed in the current climate, the following comments were taken from the responses:

"you know some people just want to change things to, to put their stamp on it. But if it doesn't lead to improvement, then I'm not for that, I would say that I'm 100% for change which actually leads to improvement" *QA10*

"The need for change and improvement can always be identified 100%. I don't think there's ever a situation where you go like nailed that usually it's maybe that bits working really well, but then that might identify something else that we thought was fine that we now need to look at again. So I don't think we'll let there's ever a situation thinking from partnership perspective where you can go, everything is sorted, it might be like that bit is but not everything else". *SB11*

"I would say that I am to a very large extent, in fact, I sometimes annoy people by the extent to which I, I advocate change and improvement but the hierarchy and its power play challenged this and were a little pre-historic in their outlook on such things". *SE2*

"It's very much become a prominent part that everybody I think needs to have on their agenda". *SB9*

“Change or improvement should be a common focus. Absolutely, I think organizations that practice a culture of some level of continuous improvement tend to become more efficient, much quicker. They tend to be much more focused. They tend to add more value. New ideas and suggestions. They're much better at thinking it through”. *SE9*

“in the current climate, change is necessary. We underwent a massive change when Covid came upon us, we had to make changes then and from those changes, we would have learned more. So there's more knowledge and there are advantages that would have been gained from the changes we made for Covid that even now that we have gone back to face to face, I believe we should try and keep them”. *QA10*

The second sub question, asking If the need for change or improvement can be identified, offered the following responses:

“I've identified the need for change or improvement, and other people haven't actually seen it yet”. *SB9*

“And the need for change or improvement can always be identified, and I would say yes or no, because sometimes we have unexpected factors such as Covid that happen, and then we need to adapt and in a way we shouldn't”. *SE5*

“right now we've got economic issues that are messing things up, we've got strikes, we've got energy problems, we've got political issues and upheaval, so therefore, change is probably always necessary because as I said at the beginning, if you say change is not necessary, it means you think you can't do any better”. *SE8*

“as we work through, we always identify the need for change, whether it is the need for improvement and then the change comes in or the other way around. but yes”. *MN7*

“The need for change or improvement can always be identified. I think I'd agree to it in a fashion, but I suppose it depends on the role that you do and how close you are to the detail and how, what your understanding is of the output of something and how you reach that output as to whether something is easily identifiable”. *SB4*

These responses highlighted the strong opinion that change should be a higher priority within HE as a whole but also with collaborative partnerships. In some interviews there were clear signs of frustration, especially from participants who had been in the sector for a number of years. These truly understood the need for improvement and in light of change being forced during the pandemic, were well aware that it can work even more if given the time and resources to plan things better. Chapter two highlighted this by stating that, whilst the education sector overall has fallen behind in terms of applying continuous improvement, the interest in this philosophy has grown with an increasing number of higher education institutions becoming more actively involved in its potential benefits (O'Reilly et al (2018).

This section underlines the importance of change and reform as perceived by the interview participants. In chapter 2 the nature of reform is highlighted with relevant literature to support this ideal but more importantly that reform has started, albeit through an agenda that focusses more on governance and policy rather than actual process change (Krucken, 2014). Higher education is facing unprecedented challenges that require necessary and significant change and reform, considerable effort along with an ability to integrate sustainability into Higher Education Institutions (Norka et al, 2017). The traditional model of higher education, often characterised by rigid structures and outdated pedagogies, is increasingly seen as insufficient in meeting the needs of a rapidly changing world. One of the main drivers for change in higher education is the ever-evolving job market. The nature of work is undergoing a transformation due to globalisation, automation, and the rise of the gig economy (Casani and Rodríguez, 2015). Traditional higher education institutions have been slow to adapt their curricula to these changing demands, many choosing to continue to place their emphasis on theoretical knowledge rather than practical skills, leaving graduates underprepared for employment.

Upon analysis of the interview data, it was evident that the majority of respondents agreed on the significance of change but more importantly the readiness factors that would be required for introducing such change in a sector that, as SE2 stated, was still “pre-historic” in terms of its outlook and reactivity. The open and honest comments made by some interviewees were a result of assurance that anonymity would be maintained at all times. SE1 and SE2 (experts in Lean) were also very vocal to express their thoughts on change within mainstream higher educational institutions, SE2 stating that he “sometimes annoyed people by the extent to which he advocated change and improvement” but that “the hierarchical power play often challenged this”.

Higher education is facing unprecedented challenges that are driving the need for significant changes across institutions globally. From shifting student demographics and evolving technologies to changes in the labor market and financial pressures, universities and colleges are compelled to reassess their traditional models of teaching, learning, and administration. Identifying the need for change in higher education is critical to ensuring that institutions remain relevant, sustainable, and effective in preparing students for an increasingly complex world. One of the most significant factors driving change in higher education is the rapid pace of technological advancement. Digital transformation has permeated every aspect of education, from administrative processes to teaching and learning practices. Technologies like artificial intelligence, virtual reality, and data analytics are reshaping how educational institutions operate and deliver services to students (Bates, 2015). Online learning platforms, such as MOOCs (Massive Open Online Courses), hybrid learning models, and digital collaboration tools are becoming integral to education, providing greater accessibility and flexibility for students.

The COVID-19 pandemic accelerated the adoption of digital technologies in higher education, revealing both opportunities and challenges. While many institutions quickly transitioned to remote learning, the pandemic highlighted the need for robust technological infrastructure and digital literacy among faculty and students (Crawford et al., 2020). This shift demonstrated the importance of technology in providing flexible, scalable, and inclusive learning environments. As such, institutions must continuously assess and invest in emerging technologies to stay competitive and meet the evolving needs of students.

Student demographics are shifting globally, influencing the demand for different types of educational programs and support services. Today's student body is more diverse than ever before, with increasing numbers of non-traditional students, including adult learners, part-time students, and international students (Altbach, Reisberg, & Rumbley, 2009). These groups often have different needs and expectations compared to traditional students, necessitating more flexible learning options, such as evening classes, online courses, and modular degree programs. In addition, students today are more concerned with the return on investment of their education. They seek programs that align with their career aspirations and provide tangible outcomes, such as employability and practical skills. Consequently, institutions must adapt to these demands by offering more industry-aligned curricula, experiential learning opportunities, and career support services (Jackson, 2016). The shift from a one-size-fits-all approach to a more personalized and student-centered educational experience is vital for attracting and retaining students in a highly competitive global market.

The increasing interconnectedness of the world, driven by globalization, has profound implications for higher education. As institutions strive to remain relevant on the global stage, they must embrace internationalization, which involves recruiting international students, fostering global partnerships, and offering cross-border educational programs (Knight, 2004). International students contribute to the diversity of the campus environment and provide institutions with a significant source of revenue, especially in countries like the United States, the United Kingdom, and Australia (Altbach & Knight, 2007). However, internationalization is not without its challenges. Political, economic, and social factors, such as changes in immigration policies, the rise of populism, and the economic instability caused by events like Brexit or the COVID-19 pandemic, can impact student mobility and institutional strategies (Marginson, 2017). Therefore, higher education institutions must remain agile and responsive to the changing global landscape, continuously identifying opportunities and challenges associated with internationalization.

Higher education institutions are increasingly being called upon to address the growing disconnect between academic programs and labour market demands. Rapid technological advancements, particularly in fields like artificial intelligence, data science, and automation, are transforming industries and creating new career paths that require specialized skills (World Economic Forum, 2018). As a result, there is a growing emphasis on aligning educational programs with the needs of the labour market to better prepare graduates for the workforce. Employers are seeking graduates who possess not only discipline-specific knowledge but also soft skills such as communication, teamwork, critical thinking, and adaptability (Jackson, 2016). This shift requires institutions to rethink their curricula and incorporate more experiential learning, internships, and industry partnerships. Furthermore, the rise of the gig economy and the increasing demand for lifelong learning opportunities are reshaping the role of higher education in supporting continuous skill development throughout an individual's career (Kezar & Maxey, 2016). Institutions must address these needs by offering more flexible, modular, and stackable credentials that allow learners to upskill and reskill in response to changing labor market conditions.

The financial sustainability of higher education institutions is an increasingly critical issue. Many universities are facing declining public funding, rising operational costs, and changing student enrollment patterns (Mitchell et al., 2018). This financial pressure is further compounded by the competitive landscape of higher education, with institutions vying for students, faculty, and research funding. To remain financially sustainable, institutions must explore new revenue streams and reimagine their business models. This could involve expanding online programs, developing partnerships with industry, and offering continuing

education and professional development programs. Additionally, some institutions are turning to innovative financial models, such as income-share agreements, where students repay a portion of their income after graduation instead of upfront tuition fees (Barr et al., 2017). Identifying and adopting sustainable financial strategies is crucial for institutions to thrive in the long term.

While the need for change in higher education is evident, institutions often face significant resistance to transformation. Faculty, staff, and administrators may be hesitant to adopt new technologies, pedagogical models, or organizational structures, fearing that such changes could undermine academic quality or job security (Kezar, 2014). This resistance to change can be further exacerbated by the hierarchical and bureaucratic nature of many higher education institutions, where decision-making processes are slow and conservative. To overcome these challenges, it is essential for higher education leaders to foster a culture of innovation and collaboration. This involves engaging all stakeholders in the change process, promoting transparency, and offering professional development opportunities to support faculty and staff in adapting to new roles and responsibilities. By building a shared vision for the future, institutions can create a more supportive and flexible environment that encourages innovation and continuous improvement (Kezar, 2014).

The need for change and reform in higher education is evident across multiple dimensions. The evolving job market, technological advancements, issues of accessibility and inclusivity, financial sustainability, and the overall student experience all highlight the imperative for higher education institutions to adapt and innovate. By embracing change and implementing strategic reforms, higher education can continue to fulfil its vital role in society, preparing individuals for the challenges of the future and contributing to social and economic progress. The process of reforming higher education will require collaboration and commitment from all stakeholders, including policymakers, educators, students, and the broader community. It will also necessitate a willingness to experiment, take risks, and learn from both successes and failures. Ultimately, the goal should be to create a more flexible, inclusive, and responsive higher education system that meets the needs of all learners and prepares them for a rapidly changing world.

The outcome from this would suggest that research objective two and research question one were met in terms of stakeholder consensus and their uniform acceptance that change is needed within the higher education sector. What these responses did not address however, was the link to process improvement directly impacting the information exchange that

happens within collaborative partnerships. Question four in the interview schedule specifically focussed on the participants familiarity with the processes involved in collaborative partnerships so this questioning was then able to extract data that formed theme 3 below.

4.3.3 Theme 3: *Processes should be constantly reviewed with the aim of improvement*

This theme came through questioning participants about their familiarity with the processes involved in collaborative partnerships, and more specifically those that facilitated the data exchange needed. The aim was to help identify the level of understanding and appreciation of these functions but also to extract knowledge of the numerous processes and if there were thoughts and ideas generated from this around general improvement or change. Research question two linked to this theme as it looked at the enhancement of the processes as well as any particular benefits, these then forming research objective three which aimed to examine what benefits might arise through adapting lean practices to these processes.

In chapter two Emiliani (2015) highlighted that applying lean to Higher education institutions administration functions is inherently complex. However, and in contrast to this, Radnor and Bucci (2011) used Plymouth University as an example whereby lean was implemented successfully within their administrative processes, helping to achieve significant cost savings and efficiency.

Lean methodology, originally developed in the manufacturing industry, has been increasingly adapted for use in various sectors, including healthcare, government, and education. The lean approach focuses on optimizing processes by eliminating waste, improving efficiency, and adding value to the end customer. In the context of higher education, lean principles have been employed to streamline operations, reduce costs, and enhance the student experience. Adapting lean into higher education is a strategy aimed at responding to the sector's growing pressures, including financial constraints, increasing student expectations, and the need for operational efficiency.

Lean methodology centres around five core principles: defining value from the customer's perspective, identifying the value stream, creating continuous flow, establishing a pull system, and pursuing perfection (Womack & Jones, 1996). In higher education, the "customer" is often considered to be the student, but it also extends to faculty, staff, and

other stakeholders. The goal is to deliver high-quality education and services with minimal waste, where waste can refer to inefficient processes, redundant administrative tasks, or underutilized resources. A key component of lean is continuous improvement, known as *Kaizen*, which encourages small, incremental changes to enhance efficiency. In higher education, this might involve regularly reviewing administrative processes, teaching practices, or curriculum design to identify areas where improvements can be made without compromising educational quality.

Lean methodologies can be applied to a variety of processes within higher education institutions. Administrative tasks, such as admissions, financial aid processing, and student services, are often ripe for lean improvements. Many of these processes tend to be bureaucratic, involving multiple steps and handoffs that slow down decision-making and increase costs. By applying lean techniques such as process mapping and root cause analysis, institutions can identify bottlenecks and inefficiencies and re-engineer these processes to be faster and more responsive (Balzer, 2010).

Another area where lean principles can be applied is curriculum development and delivery. With lean, institutions can analyze the structure of degree programs to ensure they are delivering maximum value to students. This could involve eliminating redundant or outdated courses, offering more flexible learning options, or improving coordination between departments to ensure smooth progression through programs (Emiliani, 2015). The lean focus on customer value also encourages higher education institutions to place greater emphasis on student feedback and engagement, which can be crucial for maintaining quality and relevance in an increasingly competitive environment.

The benefits of adopting lean principles in higher education are manifold. By streamlining processes and eliminating waste, institutions can reduce operational costs, improve service delivery, and enhance the overall student experience. Lean also encourages a culture of continuous improvement, which can lead to sustained long-term benefits, including higher levels of student satisfaction, greater institutional efficiency, and enhanced educational outcomes. However, the adaptation of lean in higher education is not without challenges. One key issue is the resistance to change, particularly within academic environments that may be more traditionally inclined. Faculty and staff may perceive lean as a threat to academic freedom or quality, particularly if they misunderstand the goal of lean, which is to improve efficiency without sacrificing quality. Furthermore, lean methodologies, when applied to non-manufacturing contexts, require a thoughtful and nuanced approach. The

focus must remain on preserving the educational mission while adapting lean principles in ways that are appropriate for the academic setting (Radnor & Osborne, 2013).

The adaptation of lean into higher education offers significant potential for improving efficiency, reducing costs, and enhancing the student experience. By focusing on continuous improvement and the elimination of waste, higher education institutions can respond to the sector's increasing financial and operational pressures. However, successful implementation requires a collaborative approach that involves all stakeholders and ensures that lean principles are applied in ways that respect and enhance the educational mission of universities and colleges.

In addressing this question about familiarity with the processes, exchange of information and thoughts around improvement *QA10* stated the following:

"I would say yes for the greater part because I'm somewhat new to the partnership. I'm still learning, but in general there are certain processes which are involved in whichever partnership you are involved with. And yes, I am aware of those, but there may be some specifics to this partnership that have just joined that I'm still getting to know"

Other points also mentioned by *QA10* suggested that, not only were they familiar with the processes, but had been actively looking at ways to improve them:

"Yes. In fact, we are currently looking at improvement in the communications process between the collaborative partner and ourselves, for example, when they want information, let's say a student contacts them about something which should be dealt with by us. We could create a central point where they send that e-mail to QA and then the monitoring of that central point will then distribute it to the right person within QA. So one person doesn't think someone else is dealing with it when someone else is thinking the same. Because the knowledge that we gather from centralizing that process, we can see common themes which are occurring and then we can implement changes and improvements to prevent any issues from arising based on those common themes. So that's one of the things that we're looking at".

SB11 confirmed her knowledge of the processes "I would say yeah, I'm trying to think if there's any things that I don't really know. I'd say generally I'm over every element of the partnership. There might be things that I'm not personally responsible for, you know, I guess

in terms of recruitment and that kind of admissions process, yeah, I kind of know the bare bones of it". *SB9* added that "every week we're in contact with the partnerships because we have to update them on what's happening with our students so that's quite a key part. There's always exchange of information with partners on a daily basis via teams or emails or spreadsheets".

As Head of one of the collaborative partnerships, *SE8* explained that "I'm familiar with the processes that are relevant to my part of the job. So there are processes that are centralized that are much more to do with the strategic nature of the relationship. I have no direct involvement with that. So I am familiar with the day-to-day operational processes". Adding that "You and I both know there's a huge amount of data sharing". *SE8* then went on to describe the current processes as "cumbersome and old school in the way it's done. There's a lot of manual typing in of numbers that is prone to human error. There is sharing of spreadsheets and stuff like this". He then went on to say that "they could benefit from being improved, whether they could be improved in a cost effective manner is a different question" *SE8*.

Although assumption can sometimes be a dangerous ground, on this occasion it is fair to assume that all participants were familiar with the processes that were engaged in the exchange mechanisms between parties but this varied depending on the role played but also what was exchanged. At administrator levels there would be an exchange of data around student performance, attendance, engagement and then decisions to decide what the next step was for the student. The issue here in some cases (depending on the partner) was that "It's all quite manual, it's all quite spreadsheet based or document based and kind of back and forth of that information" *SB4*. The same participant then stating that "there's a lot more use of things like SharePoint and things, but even that in itself, if we if we were able to have more kind of system integrations and things like that and be able to explore how we share data and information with our partners".

At a more senior level *SE8* also alluded to the systems being a contributing factor expressing that:

"We can't improve these processes as partners if we haven't got the systems internally to enable us to do that in the first place. Some of the things I would like to improve is partners rely us on having better systems internally and we all feel that University X systems are notoriously poor. And I can say that knowing I'm being recorded because I don't care about whether I say or not".

Note – *SE8* and all other participants were assured that all responses would be anonymous and that no names or other personal details would be shared. This assurance allowed a more open and honest response in most cases.

As part of the purposive sampling technique adopted for this research, *SE5* was selected because of their role for maintaining the technology that helped support the collaboration of the parties and the data exchange mechanisms required. During the interview *SE5* expressed that “I think data exchange is probably the one aspect that I would say that needs improving and because there's so many stakeholders there, I think that there needs to be a way of all of them to be able to access that data and collaborate within the data rather than between different systems”. *QA3* supported this opinion by saying that “in my opinion, it often leads to inefficiency and a waste of time” also adding “I don't think it's very productive to e-mail a large number of queries in separate emails throughout the week or throughout the day, I think it increases stress levels and ultimately lowers productivity”.

Other comments raised by participants were also focussed around the systems being used, *QA12* (a senior member of one of the partnerships) stating:

“Could they benefit from being improved? Yes, absolutely. Communication processes for example, if we say like who do we communicate with, how do we communicate with them? When and who and how? Where do we direct our query? So yeah, processes of just communication and who, where, what, why and then also kind of the systems the more sort of techy stuff. It's tacky processes and you know we've got some that work and some that don't”.

MB6 added a point about a partner that was a little less flexible than some, explaining that “in the nicest possible way, it's kind of their way or the highway. They're not going to look at how they can do it for us because we have to adhere to their set processes and a lot of their processes are not geared towards the sharing of information with a partner like us. It's just for their internal processes”.

This theme related to research question two partly in that it was able to identify that the processes used did in fact need improvement and many changes according to the responses given. What it did not offer however, was how a lean approach to change may benefit the processes used although having a majority of positive responses would indicate

that change is needed. This theme also lacked the clarity of connection to research objective three, again trying to highlight the benefits that a lean approach to process improvement could offer benefits. In chapter two the benefits that Rensselaer Polytechnic Institute gained through applying lean to some of their processes was highlighted as showing a reduction in errors and improved communication as well as increased student satisfaction (Balzer et al.,2016).

4.3.4 Theme 4: There are significant amounts of information in constant exchange between collaborative partners but with little apparent regard for streamlining this and increasing efficiencies

This theme, although very similar to that of the previous one, was included because it focussed more on the cost and effort involved with not actually adopting change or improvement of any kind as well as the potential benefit factor that could result if change was adopted. The thought process here is that it may offer specifics in terms of what should be the target or focus of change initiatives should they be adopted. In part this could help identify the benefits for research objective three as well as research question 3. For this reason the responses have been listed in a grid format with the change or benefit factor identified.

Responses	Change or benefit factor
QA10 “We operate a very manual process as it relates to the compilation of Marks and feedback and all of that to submit to the partners and I think there is a lot of time that is spent working on those processes, which, if we could get some of those automated the amount of money spent for staff working on those, they could redirect that time to something else and the process would be quicker so it would relieve stress and anxiety from people during the time of compiling those grades”. “It is absolutely beneficial because one of the things is when we have manual processes, we are at a greater risk of errors and I believe an automated process, while making it leaner, could flat out some of those errors”.	Greater automation of systems and processes used Improved efficiencies Cost savings in terms of man hours Fewer errors

SB11 "I think it takes buy in from all parties and I think that's the clincher, isn't it? Is that I just don't know whether there's the time. I feel like in a way sometimes we've gone backwards with processes because of this kind of security. Now I get the need for security, but it does feel to be working against lean processes sometimes because you're like, well, ohh. I had a situation with someone who couldn't download a document, edit it and upload it to the vle because it was looking like they were doing something and then putting it on an external platform instead".	Change needs to be driven by ownership and everyone has to want it
SB11 "Recording of grades and access of grades. You know I do feel lucky that University Y is a lot leaner than all the other partners. If I'm honest, that's only because of a coincidence that they've got Quercus and the way they're set-up is that they could extend that set-up for us". "I just think you know there could be ways of collaborating with the academics and with link tutors that is a lot more efficient and leaner and friendlier than it is at the moment. You know it is however much we try. It's a them and us and I know that we cause them quite a lot of headaches lower down in the hierarchy but higher up they love us".	Sharing best practice Extending systems with partners that could then connect both parties better and create more efficiencies Better communication at all levels within the institutions
SB11 "I feel like these institutions are haemorrhaging money the way that we educate now and kind of the way that these institutions are running kind of post pandemic. So the student numbers are probably not where they used to be that I just think they can't afford to not be lean and to not get rid of the waste they need to be thinking like that if they're going to survive".	A lean approach is needed to address the amount of waste within all HE processes
SE2	

“There is a slight problem at University X in that people don't own processes. So it all means that people have to come together and of course then they don't feel between the slips, as they say in cricket. So I think they get lost because nobody thought it was their problem”.	Processes need ownership
SB9 “Both sides need to have the same information, and the more you get that manual intervention, the more that the data could get skewed a little bit or they could have something different on their system to what we have in our system just based on the fact that it's been processed through different teams and for different purposes. So trying to make sure you've got the same data that the partner has and that's such a key part to the partnership actually working”. “Trying to make sure that we've got the same information, even our internal teams. So when there's updates like chairs actions for example, everybody has access to that one source of information would be better than everybody having to update their individual processes or individual sheets because somebody might miss it”.	A single source of information that all parties have access to Updates are dealt with by as few people as possible to prevent errors
SB9 “With a lot of our partners, they'll go to the exam board, we'll get the board outcomes, but we still have to send across the individual registrations for, say, retake students for a lot of our partners. That is obviously quite time consuming, but again it's also replication of work because you've got the board outcomes, so you've got the modules confirmed at that point, but you then happen to look back and some another teams picking it up and going OK. So what's this you retaking and then having to translate that again onto another sheet, then translate it into a new process and it's unnecessary duplication of work”.	Duplication of tasks across a number of different teams and individuals

“It’s definitely varied across our partners as to how open they are, I would say, but that since the pandemic it has opened up discussion a bit more and I feel like it’s helped. To get people kind of fast forwarded that process a lot more. So they are definitely a lot more ready than they were, but I still think there’s a bit of work that would be needed. “because I think there’s people that would have been quite scared of the change and particularly with education, a lot of the time it’s kind of trial and error and in a way, sometimes you do have to just take that leap. And I feel it’s kind of forced it to happen in a good way because I feel like it would have taken quite a lot longer to get to where we are today had it not happened”.	Change initiated during the pandemic has led collaborative partners to experience the benefits that change can bring
SE1 “Lean is about doing things more efficiently, but there’s an element here which is also about how you incentivize people to work smartly. So do I think a lean approach could be adopted in the processes used for collaborative partnerships”.	A lean approach could be adopted
SE8 “Think about something like the program annual review that you guys have to develop for us each year. “A lot of the data exists in systems so if we know what data will be needed at the end of the year to support the review, in principle, the systems could be set up to auto generate that data and pre-populate that part of the review. As it is people like you and me have to go and search myriad numbers of disparate databases, web sources, documents, bits of announcements just to pull together the basic numbers that we’re being asked for and the data exists, so in theory if the systems are set up to capture the data in the 1st place, then that’s better”. “Where there is a change that we need to do something about, it’s very basic management information systems, but as you well know, garbage in, garbage out,	Identify data that already exists and is being used Examine ways in which current systems and software could be used to help streamline current processes (this

right. So you, if you're clever about the information you collect and how you store it, it's then massively more valuable. So in your question about a lean approach adopted in processes, I wonder if the best area of focus would be in the aperture and presentation of useful data". "I think some organizations are much better at capturing that upfront and presenting it back to staff. So it is instantly clear. I'm constantly being told by others that University X systems are particularly poor. Given that I haven't worked anywhere other than University X they're about 10 years behind".	effectively being Kaizen – small incremental improvements). This was also referred to in chapter 2 whereby Radnor et al (2006) stated that a core element of Lean is continuous improvement (kaizen), which involves regularly reviewing processes and making incremental changes. In service settings, this requires creating mechanisms for gathering customer feedback and using this data to inform process improvements. Additionally, service organizations should establish clear metrics for measuring success, such as customer satisfaction, service delivery times, and error rates.
MN7 "A program that will minimize the manual handling of data would be pretty much a breakthrough from our current system because at the moment the amount of hours that are being wasted putting those data manually in the system it's priceless".	Current systems and processes are too reliant on manual inputs
SE5 "for me the waste is mostly focused in the communication processes which are managed by e-mail where you exchange data. That brings me back to what I mentioned earlier as I think the communication should happen within the data, as an example, when we manage the exam boards. I remember introducing managing the spreadsheet so that QA staff and University X staff would have access to the same spreadsheet and communicate within the spreadsheet and that improved the process significantly, whereas before it used to be managed just throughout the emails and that led to large amount of emails that were completely irrelevant and wasted everybody's time. I actually think that this is basically what happens at every step of the way because I'm pretty sure that	Having a single working document that is accessible by all relevant parties and is updated in real time

after I left University X they reverted back to their previous ways”.	
SE1 “I think it would be beneficial because we all work within very strict deadlines, so having a single working document would improve our efficiency and by improving our efficiency, we would have more time to deal with other important stuff such as the actual teaching and learning. After all, administrative processes are there to support the teaching and learning and I feel that at the moment they are sort of being surpassed, overtaking the learning and teaching processes”.	Access to a single working document
SB4 “I know there are areas where the lean approach probably could be taken just in the sense of thinking about, this is the process, these are the steps, is that step even needed? Is that a duplication of something that's already been done? Is that just for the sake of rubber stamping something and is just complete waste”. “Their systems (University X) talk to each other, so when something's marked on their VLE it sucks it straight through into their record system. That just doesn't exist on (University Y) because they've got that lean approach and they've got those systems in place that kind of manage all of that”.	Areas identified for a introduction of a lean approach Some elements of lean do exist within current partner processes and the benefits are clear.
SE1 “Where there are improvements needed that a lean approach could be adopted, whether that would apply across kind of all of the areas that maybe require a change or process improvement, I'm not 100% sure, but I think, just off the top of my head, I could probably list a number of processes that I think we could look at adopting a lean approach to”.	Areas also identified for a introduction of a lean approach
QA3	

“We could streamline the processes, we could make them more efficient, we could make better use of time. I think you know, obviously I wasn’t in post at that time, but I understand before the pandemic we used to travel over 100 miles for an exam board meeting which I think was not lean at all because it involved a considerable expense and obviously time, which often is not quantified financially. So I think we have been moving towards more of a lean approach, but I think we could make it even leaner if we tried”. QA3 “but at the end of the day I think change takes a lot of effort and a number of stakeholders so you know it. It’s not just someone imposes the change and then we all go along with it. It involves people buying into that change and adapting to it. So I think that the real question here is, do we have the right people to implement that change and make sure that it’s effective? The transition is effective and everyone buys into it. Do we have that person who knows exactly what is required and can set out a clear guideline or not, but as a readiness, yeah, I think it’s definitely ready. It’s just whether we have the right resources for that or not”.	A lean approach has already started as a result of the pandemic with clear benefits of time, money and resources having been identified Change needs stakeholders The sector is ready for change
MB6 “We have a lot of manual processes that are very slow and I know the partners themselves suffer from that like there their systems will only allow manual entry which therefore leads to errors” “We know we all have to check it. It’s fine. It’s always, is this right? Can you have a look? Is this right? And that comes back to my team and then we have to check it all. I think if we could ever be confident that one single data transfer is successful, then we would have a lot more free time on our hands”.	Too many manual processes A single data source or point of entry for inputting data

QA12 “The ones where you know they're manually doing it, we're manually doing it. That's where we have a lot of back and forth. So I think you can see the partners that do, you have to have a much higher tech approach. We can spend a lot less time on that but the systems haven't changed. So the system needs to be more flexible because we can't just be so hard lined with the students anymore, we've got to have more flexibility and because the systems can't handle it, we're constantly finding workarounds”. “I think there are people in the HE sector who are very ready for a change”	Manual inputting needs to be replaced with the use of more and better systems that can automated as much of the data entry process as possible
--	---

The interviewees were all involved within operational components, this adding more integrity and value to the answers offered. The aim with this question and subsequent questions was to establish an understanding of the level of appreciation for the mechanisms that are involved within each of the participants respective partnership and if there were any thoughts and ideas around change. As Head of Partnerships for University 1, SE8 made a point that he should know all of the processes involved with the partnership but then went on to explain that there were “centralised processes that were more related to the strategic side of the partnership” and then there were “operational processes that facilitated the day-to-day running of the collaboration” and that these were more aligned to his role. He also went on to point out that there is a “huge amount of data sharing” within any partnership but in his opinion the processes were “cumbersome and old-school” with manual elements that lend themselves to human error.

Other participants also expressed a similar point of view stating that “we are currently looking at improvement in the communications process between the collaborative partner and ourselves” QA10, and “I do think there are some processes that are a lot leaner on (partner 3) than they are on (partner 1)” - SB11. The communication process seemed to be a re-occurring point mentioned by a number of interviewees, QA3 stating that “We're basically expected to operate just like in an example, then basically have everything ready now before the pre board. What happens is that we receive a high number of emails, a high number of queries. Queries are often then emailed separately” whilst SB9 adding that “registry as a

whole and a lot of the kind of communications, especially with change of circumstances that every week we're in contact with the partnerships because we have to update them on what's happening with our students".

In summary of this topic that aimed firstly to show the impact and cost of not actually making any changes to the processes, a number of participants highlighted the fact that current processes were very manual in their nature and that this led to increased time and cost as well as the increased likelihood of errors. Participants also expressed the need for greater automation and updated systems with the addition of regular checks on process performance, ultimately adopting a kaizen approach of small incremental improvements. Data entry was a key area mentioned with some suggesting that a single working document could have a great benefit to all teams or individuals involved with collaborative partnerships, preventing duplication of documents, as well as possible errors when copying one set of data over to another document. There were also comments to suggest that some University partners had made significant changes during the period of time around the pandemic and that these changes had become common practice within the limited processes that they applied to "a lean approach has already started as a result of the pandemic with clear benefits of time, money and resources having been identified" QA3. A final point to note from this theme is that participants also made note of change needing to be driven by ownership and stakeholders but that the sector itself is ready for change, linking to RQ3 and RO4.

4.3.5 Theme 5: Crisis management and Business Continuity Planning (BCP)

This theme was initiated through the final questioning of the interviews, the idea being that if a major incident occurred that was unplanned, how would the institutions react and would this require a change or agile reaction. Relating to both research objective 4 and research question 3, the aim was to extract thoughts and ideas around how prepared the institutions were, not just in the instance of a crisis or BCP, but their overall perception of actually integrating any form of change management philosophy into the organisations. The basis for this questioning was to examine the respective institution's reaction to the Pandemic that hit the UK in early 2020. A point to also note here is that further research and questioning on this topic was undertaken as part of the triangulation through the questionnaires issued for the developmental paper. The results of this questioning are highlighted more in discussion chapter.

The aim of the questions relating to this theme was to explore whether or not the various HE institutions had any form of structured plan to deal with a potential crisis or BCP, whether

staff felt that their own institutions were actually prepared for such a disruption and, if they were part of any changes needed to cope with the pandemic, would they say that opportunities had been identified through this forced crisis. *QA10* explained that he knew that his institution had such a plan but was unfamiliar with the actual details of such a plan, comparing the “large scale response needed to address Covid” with a much smaller reaction needed if a member of staff “suddenly becomes sick and there's an urgent need to find a replacement”. He proceeded by stating that:

“I could conclude that they might not be fully prepared for the radical changes. I mean things happen more quickly in the private institutions, for the government institutions that so the main universities, I should say, because of the more bureaucracy and the hierarchy and the process that things need to go through sometimes do take a long time” *QA10*.

Reflecting on her own experience of the crisis *SB11* explained “if there's a train strike, we can go online in a day which I think we never would have been able to do pre-pandemic”. *SE2* had a slightly different perspective suggesting that “the COVID crisis has brought up lots of problems. I think problems that we're lurking now beforehand, the obvious one was the fact that we all had to go online very quickly, people tended to ignore other unforeseen consequences, the whole thing about the delivery of course is being very much thrown to the fore, I do think that this is something that hadn't been worked through”.

A lot of the responses for this questioning focussed on the change to online delivery as a direct result of the pandemic, and how this impacted individuals. Whilst some made reference to BCP, the majority saw this as an opportunity for discussion around the speed at which change was needed and the fact that this externally driven crisis required everyone to adopt a change philosophy. Change of any kind requires current processes to be re-engineered, Business Process Re-engineering (BPR) being the correct terminology for such an action. *SE2* made reference to the process element stating that “very many people have got into positions of authority because they're good with processes but the trouble with the processes is that they become rigid and become an ending themselves”. He continued by expressing that “they don't have the flexibility or the agility or the flexibility to be agile”.

Continuing with the theme around rapid change, many of the participants were also very open and honest about their own experience and ability to make changes to the way in

which they taught, QA10 explained that he had not “formally delivered online before, so I had to make sure that I knew how to do it in terms of learning how to use the different systems”, further stating that “I am a people person, I would say, and I thrive on physical interaction with people. So mentally for me it was quite challenging to deliver online. Initially I hated it. I did my best and the students wouldn't know the difference, but I dreaded having to deliver online, so that was a huge effect on me”. This change in delivery was also commented on by others:

SB11

“I knew that the quality probably wasn't great. I knew that we were learning and I knew that there be some people that would hit the ground running and take to it like a duck to water but then I also knew that some weren't going to be very good”.

SE2

“And then of course, we didn't have an expert, well, very little expertise. Anybody who did have any online expertise actually left and went to the OU or somewhere like that where they were under pressure to do to do these things. Anybody who had any kind of online learning expertise was snapped up by somebody else. I don't like doing online lectures and the reason for that is because I don't get enough feedback from my audience. So about halfway through I realized I'm just talking to the wall and a rather monotonous way because the wall isn't reacting to what I'm saying”.

SE5

“some institutions had already implemented some online teaching and learning, but I think Covid made University X realise that it can't happen in the next few years, it needs to happen now, and I think the fact that it did happen made both academics and administrative teams realise that it wasn't as hard as they had originally thought. So it's the other end of it where even though Covid is no longer at the same scale as it was before, they are willing to continue with the online delivery of education and should any other circumstances arrive, I think they're more prepared now after Covid, as I said earlier, just because Covid made them realise that when decisions need to be made quickly, they can be made quickly”.

SE8

“Responding to the challenge and adjusting its regs and working out what to do differently, now, having said that, you could argue it wasn't surprising at all because it had to do that or

die. Were we fully prepared? No. How prepared they are? You have to ask the people at the top and the problem is you won't get a truthful answer out of them because they'll always tell you they're very well prepared, whether they really are or not, I don't know". The truth is that a lot of these other institutions did respond reasonably quickly. I was part of the change. How did it impact me? It impacted me because I had to learn some new skills, particularly around use of technology, I had to change the way I did certain things that I'd done for years like classroom teaching. I had to learn to teach virtually, make minor adjustments to things like assignment to reflect the nature of how we were having to go about doing things. It forced us all towards a bit more of relevance of a blended learning approach".

SB4

"Any kind of significant changes or crises to deal with would kind of feed into the SMT committees. Do I think they were fully prepared? I wouldn't say so, no. The pandemic was a good example. We managed that crisis and were agile and got things in place very quickly but I don't think you would have said that looking back now six months prior to that".

QA3

"in March 2020 we had to quickly switch from face to face delivery to online delivery. Now we keep having to do that due to a number of reasons such as strain strikes and from one day to the next. You know we have to switch to on online delivery. I think education as a sector is very entrenched into its own way and the status quo. So I think, you know, although I said that, I think the sector is ready for change, I think it is difficult to change, which is why the change implementer is so, so important. So I don't think they're ready or fully prepared for disruptive events. They might have improved their resilience in the last two years. But I think they still have room for improvement and I can see several universities you know making attempts at delivered developing content online and increasing the numbers of programs that they're delivering online, which means that they're improving their flexibility, but obviously change doesn't happen overnight".

In summary of this topic which linked to research objective 4 and research question 3, the comments made by a significant number of the participants were based around their own experience of having to deal with some form of change or even find themselves having to react quickly in light of an incident. These took a number of different forms from simply changing a lecturer of a class due to them not being available, through to one of the most significant changes that impacted everyone in terms of the pandemic in 2020. Answers and comments given could be seen as confirmation that the sector is ready for change but this could be subjective based on the driving factor and constraints imposed. Readiness is not

necessarily something that can be measured but more of a plan that aims to address a potential crisis, again given a set of factors. In terms of the associated research question, change is not necessarily about the adoption of lean but more of an adaptation of a process to better suit a changing need. In all cases mentioned from the participants the changes referred to were based around a need to do something differently rather than a desire to be more efficient

Chapter Five: Discussion

5.1 Introduction

This chapter will discuss the key findings of this study in relation to the aim and research questions shown in chapter 1. These are based around a focus on establishing if there is a basis for the adaptation of a lean approach into Higher Education, in particular, that of collaborative partnerships and the exchange of information. Three research questions were presented relating to stakeholder perceptions, the benefits of lean, and if the HE sector was ready for such a change. The main purpose of this chapter is to interpret the findings shown in the results chapter, relating it to the literature and theoretical models, as well as any practical implications.

This research started in September 2018 and the original idea or thought was to examine the implications or the probability of adapting or including lean within the collaborative partnerships in higher education and in particularly the exchange process of information. During the first year or so the intention of the research remained consistent but then in early 2020, with the onset of COVID-19, things changed. During the first year of the research the focus remained consistent with what had originally been agreed with the supervisors with a slight addition that would examine if a consensus existed within a targeted group of individuals, these being part of a purposive selection. In the initial stages of the research the idea for data collection was always going to be qualitative and primary and was always going to involve staff both academics and professionals within the higher education sector. A significant amount of previous research had also adopted the same methodology successfully (Balzer et al, 2016; Balzer et al, 2015; Antony et al, 2012; Sunder and Mahalingam 2018).

5.2 Focus group – data collection 1

An initial informal focus group took place at a local conference in London that included six key staff from three of the university partners where the conversation started in terms of the focus of this research. Each of the people within the focus group had their own levels of interest in the research topic and how this could potentially offer solutions to some of their inherent issues. Within their own universities they had been part of processes that had remained virtually unchanged for many years. Each of the participants had been working in the sector for a number of years ranging from 18 to 27 years, their level of knowledge and experience being unnecessary to question.

Access to this first group of participants that formed this focus group was relatively simple and happened by chance. The one regret here is that no formal record of the conversations were gained as this was never a planned event but did however, prove to be extremely valuable. Being part of the same conference held in London, access and the consent of this informal focus group was strictly verbal however the level of interest was such that each wanted to offer their own opinions but also their own constructive support and ideas on how the next stage or step of this process would work. The participants gave ideas and thoughts in terms of the direction of the data collection but also the potential participants of that data collection and the way in which this could be this could be. There were many comments made around change and the fact that there was little focus on this, their institutions simply adopting the same processes year after year.

The participants of that first initial focus group in late 2019 also gave ideas and thoughts around the questioning techniques but also the types of questions that could be used or the type of themes that could be considered in terms of extracting the right kind of data to align with the aim of the research but also the objectives and research questions that had been set. Unfortunately with the onset of COVID-19 in March 2020, the next phase of data collection was delayed significantly due to the changes that had to be made within the organisation, the various lockdowns that were enforced by the government, the restrictions in movement and various other impacts that had an initial delay in the overall progression of data collection.

5.3 Online questionnaire – data collection 2

In March 2020 when the first pandemic lockdown was initiated the whole of the educational sector including that of higher education and any collaborative partnerships had to rethink

their delivery strategy to the students and initially made changes from face-to-face delivery to that of an online provision. Whilst the pandemic brought about many challenges to the HE sector it also offered a period of time that proved to be very thought provoking, innovative and creative whilst also giving a previously unrecognised opportunity. This opportunity was one that would emerge as a matter of both necessity and urgency, one that would require change and agility. As a consequence of the delay in progress due to many activities having to be undertaken within the HE role to move thousands of students from a classroom delivery to that of an online one, the author decided to write a developmental paper for a BAM conference held in Manchester in 2022. This developmental paper looked at the period of COVID itself but more important at collaborative partnerships and how changes had to be made in order to continue the delivery of a quality education but with limited capacity, knowledge and experience for delivering online. Ironically the paper also explored whether the changes in delivery modes due to the pandemic were a lean approach and indeed forming what could only be described as the 'new normal'.

The content of the paper was based around HE institutions ability to manage a crisis situation and adopt alternative methods of operation or deliver, connecting this to any such business continuity planning (BCP). In order to collect the data for this developmental paper 10 questionnaires were sent by e-mail to a number of participants across the collaborative partnerships of QA higher education. Again its fair to state that at the time, this action was intended to support the development of knowledge around the sectors ability to make change when forced to, but also in the context of a crisis. Each questionnaire consisted of a series of questions that would enquire and challenge the institution's ability to manage a crisis that was completely unexpected and then to maintain the business operations accordingly. The intention of the questionnaire was also to examine if the institutions had any form of business continuity planning (BCP) and if so, how well it supported such a crisis. As previously stated, the purpose of these questionnaires were solely focused on the topic for the BAM conference. However, and simply by chance, the data collected ironically correlated to the theme of this thesis and some of the objectives within it.

For this method of data collection access to participants was relatively easy due to the nature of the author's own role within the HE sector but also the network that had been developed with other collaborative university partners. The initial focus group held during a conference was an amalgamation of colleagues and counterparts that were available at that same conference but had also been working with the author on developing the collaborative programmes and partnerships but also additional programmes within the remit of the partnerships. Following on from that initial focus group the ideas for participants to progress

the data collection of the original topic area were made clear by and from the participants of the focus group itself. Consisting of 6 academics and professionals, the focus group was then able to develop as a snowball effect by using 10 further respondents as part of the questionnaires for the development paper in 2022. The 10 respondents used for the questionnaires of the development paper were also academics and experts from across 5 university partners who held positions that varied from administrative through to Programme Leaders, Associate Deans, Head of partnerships and even a Pro Vice Chancellor. This spread of roles and responsibilities was intentional as part of the purposive sampling approach to enable data collection that was rich, appropriate and valid to the research topic.

Although the developmental paper written for the BAM conference in 2022 was seen as a separate entity initially, it soon became evident that this clearly reflected an interpretivist approach, focusing on subjective experiences and multiple stakeholder points of view. Along with the intended semi-structured interviews, this would form a triangulation approach to data collection, giving a more credible and well-rounded outcome by examining stakeholder perspectives at specific points in time using the multi-method qualitative approach. It's worthwhile mentioning that during the data collection phase especially with this round of questionnaires, there were some doubts in terms of how this research would evolve and how it would continue to align with the original idea based around the potential for adopting and adapting a lean approach in HE collaborative partnerships.

The questions used within the questionnaire for the developmental paper were based around the impact of the pandemic on collaborative partnerships and in particular what that impact was specifically and how that was addressed or overcome by the relevant partnerships in terms of any changes made. The initial question looked at if there had been any immediate effect on the partnership itself and if so whether they had seen a positive or negative impact as a result of the pandemic. The second question looked at the future prospect and how this pandemic would shape or could shape a more permanent online adaptation of educational delivery part. Continuing on from this the questionnaire then looked to identify what challenges the collaborative partnerships now faced as a result of firstly the pandemic itself and then secondly the changes that had to be made to overcome the conditions imposed by the pandemic. Furthermore, it explored the measurements taken by the collaborative partnerships in order to move past the pandemic and resume some form of credible but purposeful teaching and learning experience.

Another point explored within the questions of this developmental paper was that of the organisation competency but also efficiency and whether, through the pandemic experience,

the collaboration had in fact strengthened as a result of working together to find solutions that would help continue with the delivery of the qualifications required by the students. The final point of the questioning was to examine why the university themselves chose a partnership format as part of the business model and how they felt this initially was of benefit but also going forward from the pandemic how this could also be strengthened and developed further as there was undoubtedly a closer working relationship developed as a result of having to work together to get through the pandemic itself.

Throughout the period of these questionnaires the participants were always keen to be part of the process for data collection and seemed motivated by the ability to explain their own experience of collaboration to get through the pandemic, but also the lessons learnt about how they could then develop even more going forward. Following collection of the completed questionnaires and the analysis of the results taken from each of these, the following themes emerged.

5.4 Theme 1 – The Covid crisis has impacted Collaborative practices

The first theme identified was quite a relevant one in that it suggested that the pandemic had significantly reshaped collaborative practices within higher education partnerships, most notably the strengthening of the collaboration partnership itself. *Participant 1* stating that “the pandemic has opened up more positive technological collaborative processes which has helped to make some of our processes with partners more efficient and more open to changes which they may not have been before”. Some required changes have meant that the need to rapidly interpret and implement evolving regulatory frameworks is now necessary to foster closer working relationships across both roles and institutions. The shift from face-to-face to online, whilst still causing some discomfort to staff, has created several efficiencies, mainly through a lesser reliance on travel to perform activities such as meetings, moderation processes and exam boards. The transition to more online formats has resulted in time and cost savings in addition to a more sustainable practice. Online exam and programme boards have been highlighted as particularly efficient and environmentally friendly.

Furthermore, the pandemic has accelerated digital adoption among both staff and students, improving technological competencies and enabling more flexible, responsive modes of teaching and communication. Enhanced communication channels, particularly at levels such as Programme Link Tutor and leadership levels, facilitated the rapid reconfiguration of

assessments and ensured the continuity of academic delivery. “The pandemic has resulted in a closer collaboration between QA and the partner, a positive effect of the pandemic” (*Participant 10*).

However, as with most instances requiring change, developments have not always been without challenges. An increase in the use of email communication has resulted in longer response times and in some cases, a decline in interpersonal communication. The change from face-to-face to an online delivery has affected the social dimension of academic collaboration and engagement with students. Additionally, the ability for staff to adapt to change has created obstacles, this often being the case in such situations. Whilst an actual resistance to change was not highly visible, hindered efforts to modify assessments and curriculum delivery effectively was observed. The transition has also raised questions regarding the long-term viability of remote delivery models, particularly in contexts where programmes were not originally designed for online delivery. This has necessitated a re-examination of the extent to which partner institutions can implement bespoke blended learning approaches.

Overall, whilst the pandemic introduced substantial challenges and changes, it also brought innovation and creativity to the forefront of Higher Education delivery. Change is never an easy process but in the case of the pandemic there was no other option. Institutions had to change but more importantly they had to do it quite quickly, suggesting both a lean and agile approach. Stakeholders taking part in this data collection expressed their opinion that the pandemic had a strengthening impact on the collaborative partnership and that change did happen, albeit in a reactive and agile way. However, it also had the benefit of pulling all resources in the same direction and creating a ‘coalition’ type environment whereby all focus was on maintaining the student experience.

5.5 Theme 2 – A lasting change for online delivery and modes of teaching

The second theme drawn from the questionnaire was based around how quickly the pandemic has driven a lasting change in the modes of teaching, learning and academic collaboration, *participant 2* pointing out that “while institutions are gradually returning to pre-pandemic operations, a “new normal” is emerging, characterised by a sustained emphasis on blended learning”. This hybrid approach has the ability to leverage the strengths of both online and face-to-face delivery, reflecting lessons learned during the pandemic. Online

teaching will undoubtedly remain a central component of educational delivery, underpinned by demonstrated benefits such as flexibility, improved accessibility and the realisation of engaging staff across geographic locations without the need for travel. Similarly, administrative functions such as meetings and exam boards are likely to remain online, offering efficiency and cost savings.

This transition has prompted institutions and partners to re-evaluate and adapt key elements of their provision, formative and summative assessment strategies now having undergone constructive revision to better align with a blended delivery format. There has been a notable improvement in the integration of asynchronous learning materials and more effective use of virtual learning environments (VLEs), contributing to an overall enhanced learner experience. “There has been adaption considered for some syllabus as well as formative and summative assessments/activities, this positively sparking a more constructive reflection and review of those related modules” *participant 8*. Institutional processes are also evolving to accommodate a more digital-first environment including rethinking of administrative workflows and processes that are quite heavily reliant on paper-based documentation to ensure compatibility with new and revised remote and online practices.

As with theme one, these adaptations or changes initiated during the pandemic are now firmly consolidated into long-term strategies of HE and their collaborative partners. These changes reflect, not only a response to necessity but also a proactive effort to improve quality, flexibility and inclusivity in higher education provision. Ongoing collaboration with partners remains essential to ensure that delivery models are pedagogically sound, aligning with institutional quality assurance standards as well as responding to the needs of diverse student populations. This theme has again shown the ability for collaborative partnerships to embrace change in a way that benefits both parties even if it was forced through an external channel.

5.6 Theme 3 - Challenges faced as a direct result of the pandemic

In response to the evolving circumstances that came from the pandemic, universities and their collaborative partnerships have continued to adapt assessments, academic regulations and delivery methods to better support student progression. However, a critical challenge remains in ensuring that these ongoing changes are communicated to all stakeholders in a timely, clear and constructive manner. Effective communication is essential, not only for implementation of change, but also for maintaining confidence in institutional processes and

academic quality and rigour. “Parity of experience between online and in-class teaching are a challenge, as teachers need further training in teaching online” *participant 4*”. Quality assurance continues to be a priority, particularly as institutions navigate a rapidly changing higher education environment. The shift in employer expectations regarding graduate traits and attributes in a post-pandemic workforce now requires a re-assessment of programme content and delivery modes, one that will address the changing nature of the job market.

Participant 3 supporting this by stating that “we continue to face the challenges posed by the changing landscape of the future work place and evolving set of skills employers are looking for in the post-pandemic graduates, the partnership needs to evolve accordingly to ensure it maintain its relevance”. Collaborative partnerships must evolve accordingly to ensure that curricula remain relevant and aligned with the contemporary and now evolving skills demands of a different labour market. “Recruitment of students due to Brexit, and reassessment of career choices (choice of degree is affected by the pandemic; shifting change of priorities is apparent in the university)” *participant 9*.

The need for a more tailored design in online modules has become increasingly apparent, a uniform approach across both face-to-face and online teaching now being insufficient. Educational Institutions must ensure that digital delivery is purposefully designed and pedagogically sound rather than simply following a traditional format. Equipping both academic staff and students with the skills and confidence to operate in a hybrid learning environment is another ongoing priority, ensuring familiarity with digital tools, platforms and best practices, this being essential for engagement and success in both online and blended learning contexts. The pandemic also highlighted the value of flexibility in academic delivery, a number of institutions and partnerships adopted adaptable approaches in recognition of students’ diverse personal challenges during this period. However, as higher education moves beyond the emergency phase of the pandemic, a key challenge now is recalibrating the expectations of stakeholders. HE Institutions and their partners need to find a compromise between the flexibility that the pandemic-era offered and reinstating academic structures and standards that still offer the benefits realised.

Some HE partnerships experienced significant growth during the pandemic, managing the complexities of fully online provision and then transitioning to hybrid models that included live-streaming and in-person delivery. This growth, while positive, has introduced challenges around resource allocation, restructuring and sustaining both staff and student experience. Additional concerns now include increased incidences of academic misconduct, contract

cheating or ghosting writing alongside heightened student support needs relating to mental health, well-being, financial hardship and cross-cultural adjustment.

A realistic view of the changes that were made during the pandemic and then the reversal attempts that were required as the restrictions were lifted is that a direct balance or re-balance is almost impossible. Staff and students have been through an extended period that offered a significant amount of change. In a way it could be seen that some of the change has had a more detrimental effect on the higher education system and process. Transitions and the reversion from temporary pandemic-era solutions to more permanent practices have revealed some weaknesses in internal communication channels. Ensuring continuity, clarity and consistency in administrative and academic procedures needs ongoing change but will remain a key challenge.

5.7 Theme 4 – The requirement of rapid and reactive change to combat the pandemic

The pandemic period required swift and comprehensive adaptations across teaching, assessment and institutional operations. In response, universities implemented a range of pedagogical and structural changes aimed at preserving academic continuity while still supporting both staff and students through unprecedented disruption. One of the key ingredients amongst this was the transition to fully online teaching supported by targeted staff and student training in the use of a digital learning platform. “All classes were moved online to ensure the continuance of learning and staff were trained to utilise the online learning tools which were not previously used” *participant 4*. Online classes, including live sessions and in some cases, pre-recorded lectures, ensured the continuity of learning while providing flexible access for students. Initiatives such as online drop-in sessions, additional virtual staff consultation points and enhanced asynchronous learning materials helped to enrich the student learning experience and accessibility.

“Assessment processes were significantly restructured to accommodate the constraints of remote learning” *participant 5*. These included adjustments such as increased flexibility with deadlines, extra resit opportunities, relaxed requirements for mitigating circumstances and in some cases, options to undertake alternative forms of assessment e.g. an extended literature review rather than a full dissertation. Additionally, policies like the ‘no detriment’ approach were introduced to safeguard student progression during periods of disruption. Hybrid learning models have since evolved from these experiences. Recorded sessions

have further ensured that all students have equitable access to learning content, regardless of their circumstances.

“Staff wellbeing and engagement have also now been seen as a much higher priority, institutions introducing greater flexibility in work arrangements, this positively influencing productivity and work-life balance” *participant 4*. Enhanced communication through more frequent partnership meetings, expanded use of digital collaboration tools (e.g., SharePoint and Microsoft Teams) and structured support such as workshops and guidance touchpoints have been instrumental in sustaining staff morale and operational continuity. Many of these changes have not only addressed immediate pandemic-related needs but have also informed ongoing best practices.

The overall experience has accelerated the integration of digital technologies, promoted greater flexibility and redefined expectations around access, delivery and support in higher education. Most importantly, institutional policies and partnership management strategies continue to evolve, guided by academic integrity and responsiveness to the changing needs of learners and educators.

5.8 Theme 5 – The collaboration has been enhanced and greater competence & efficiency developed through this learning journey

Participant 6 commented that “the collaborative work between institutions has generated both opportunities and constructive challenges, particularly in relation to communication with external stakeholders”. Navigating these interactions has required greater coordination and adaptability, fostering institutional learning and more resilient partnership management strategies. From the perspective of the University partner the engagement with partners such as QAHE has proven mutually beneficial. The collaboration has facilitated knowledge exchange and highlighted areas of operational strength, such as QAHE’s effective use of online delivery platforms and coordination systems, which the partner University aims to learn from and adopt. Moreover, such partnerships have enabled the delivery of academic programmes that would have otherwise been beyond the institution’s immediate capacity, thereby expanding educational reach and diversity.

Partner-focused training initiatives have also played a vital role in enhancing the capabilities of staff, particularly in performing non-teaching responsibilities, which supports the holistic functioning of academic programmes. This upskilling is essential for maintaining quality and efficiency in a blended or online learning environment. *Participant 8* pointed out that “there

are still improvements to be made with efficiency, resources being maximised during lockdowns and allocation of resources were made easier when delivery and support was fully online as resources could be used across multiple campuses". The pandemic accelerated the adoption of blended learning, a model that now appears to be embedded in long-term institutional practice. "Remote working and online meetings have introduced new efficiencies, reducing travel time and costs, enabling flexible participation, and allowing staff to manage time more effectively across multiple responsibilities" *participant 10*.

The ability to securely share documents through digital platforms has supported improved data integrity and management whilst being privacy compliance. Despite these advances, the experience has also revealed areas requiring continued development. While resources were optimally allocated during periods of fully online provision, the return to hybrid delivery presents renewed challenges in resource distribution, staffing, and operational efficiency across multiple campuses. Continued refinement of systems and processes is necessary to sustain the gains made and support further growth.

5.9 Theme 6 - HE partnerships have supported the QAHE business model

"The adoption of a multi-modal delivery strategy has long been a deliberate institutional decision, rooted in a vision to expand access to higher education and diversify student engagement" *participant 3*. Offering multiple modes of delivery allows institutions to target distinct learner groups, enhance social and economic impact, and increase income streams through broadened participation and market reach. A key advantage of the partnership model lies in the ability to collaborate with well-established institutions that bring with them years of experience, accredited programmes, and proven regulatory frameworks. "This significantly reduces the need to design new courses from scratch and allows for faster, more efficient programme implementation" *participant 6*. Furthermore, it offers opportunities for knowledge exchange, co-development of academic practices, and innovation in pedagogical delivery.

"Host institutions with physical capacity constraints such as limitations in teaching space and accommodation, forming partnerships offers a strategic path for sustainable growth" *participant 5*. Expansion through external partners enables increased student numbers and revenue without requiring equivalent investments in infrastructure or permanent staffing. From a broader institutional perspective, higher education partnerships offer several strategic benefits: geographical expansion, diversification of delivery models, and access to

new or underserved markets. These benefits align with sector-wide goals around widening participation, inclusion, and innovation in learning.

Partner institutions also benefit by aligning with universities that value teaching-focused provision and maintain robust quality assurance systems. Academics in such environments have the reassurance that the model provides a structured and supportive setting in which to deliver established curricula while contributing to the institution's access and impact agenda. Overall, the partnership model in higher education represents a dynamic and mutually beneficial framework. It supports strategic growth, pedagogical innovation, and the delivery of high-quality education to a broader and more diverse student population.

5.10 Reactive adaptive model

During the process of data collection for the developmental paper, the reactive adaptive model was identified as relevant to this research. The Reactive-Adaptive Model (RAM) effectively conceptualises responses to environmental changes in two specific but sequential stages, these being reactive and adaptive. RAM can offer a useful framework for understanding and guiding agile transformation in higher education institutions (HEIs). This model allows stakeholders to differentiate between immediate responses to disruption and the longer-term structural changes necessary for sustainability. Whilst not having a specific single author like most formal models, the terms reactive and adaptive in RAM are essentially used as descriptors that align with various strands or disciplines such as systems theory, organisational behaviour or in this case, change management. However, depending on the context in which the model is applied, different scholars and frameworks may use or define the two terms similarly, discussing reactive and adaptive behaviours in relation to high reliability organisations (Sutcliffe and Weick, 2015).

The reactive part of the model refers to short-term, rapid, often unstructured responses or reactions to and external tension or strain, in this case the onset of the pandemic in 2020 being such a tension or stressor. In Higher Education this was significantly illustrated with the initial response to COVID-19 pandemic. Most if not all universities worldwide were forced to react abruptly and move to online teaching and remote work environments. These decisions, whilst hugely necessary, can be identified as reactive, the main focus being on maintaining a continuity of service rather than implementing a lasting pedagogical change (Bozkurt et al., 2020). HE Institutions adopted emergency remote teaching (ERT) strategies, often relying on pre-existing technological platforms with little time for training of staff or students (Hodges et al., 2020). However, this reactive phase was not sufficient for

institutional transformation, instead, the main goal for all HEI's during this period of time was operational survival and immediate service delivery.

Without an actual transitioning plan into the adaptive phase, HEIs risk reverting back to the old models of delivery or continued ineffective practices. The adaptive phase of RAM involves significant reflective learning, strategic planning and the incorporation of new systems and processes to create long-term change (Sutcliffe and Weick, 2015). In the context of higher education, adaptation implies, not just using digital tools but re-thinking the educational delivery model itself. Consideration for student-centered learning, digital literacy, blended and hybrid modes of delivery and the redesign of curriculum to align with future workforce demands and a changing job market (Salmon, 2020). Agility in both the reactive and adaptive phases become crucial, agile transformation being rooted in software changes or development but increasingly applied in organisational change, emphasizing iterative processes, stakeholder feedback and the adaptability to changing conditions (Beck et al, 2001). HEIs need to establish and embrace flexible governance structures, interdisciplinary collaboration and responsiveness to student and industry needs. Examples of this are Institutions like the University of Southern Queensland and Arizona State University who have demonstrated adaptive agility by embedding innovation labs, feedback loops and continuous improvement processes into their academic planning (Brown et al, 2021).

Implementing the reactive adaptive model in any agile higher education context is not without challenges. Institutions often face organisational cultural and structural barriers to any type of change, especially that of adaptive change. Faculty resistance, bureaucracy and misaligned incentive structures can all impact agile implementation (Kezar & Eckel, 2002). Additionally, the rapid adoption of technology can very quickly highlight the equity gaps of staff and students if not supported by stringent support systems. Therefore, successful transition from the reactive to the adaptive phase will always require inclusive leadership, transparent communication and a commitment to continuous learning across all institutional levels (Fullan & Scott, 2009). The reactive adaptive model offers a valuable framework for understanding and managing change in higher education, particularly in environments requiring agile transformation. The model supports institutions to differentiate between immediate, crisis-driven actions and strategic, sustainable adaptation. In moving from reaction to adaptation, HEIs can position themselves not only to survive disruptions but to thrive in an increasingly complex and competitive educational landscape.

Bozkurt and Sharma (2020); Bozkurt et al. (2020) and Hodges et al. (2020) referred to Emergency Remote Education (ERE) as a rapid and large-scale shift by HEI's to counteract

the pandemic. Whilst ERE is similar to traditional forms of distance education, the two approaches are fundamentally distinct and different in purpose, planning, and pedagogical foundation. ERE could be characterised by its reactive nature, being a temporary, improvised solution adopted in response to a crisis situation such as the pandemic. In complete contrast, distance learning is the product of deliberate instructional design, guided by educational theories, technological infrastructure and long-term strategic planning (Bozkurt & Sharma, 2020b). This distinction has significant implications for both the quality of learning and the capacity of institutions to adapt effectively in the long term. ERE however, lacks the robustness, learner support systems and assessment strategies built within well-developed distance education programs (Hodges et al. 2020). An example of this was in the early part of the COVID-19 crisis when many universities decided to simply take the existing face-to-face delivery of a course and deliver online with little or no adaptation, this leading to challenges in student engagement, accessibility and achieving learning outcomes (Bao, 2020). Learning from this and moving forward, HEI's should transition from reactive strategies such as ERE, towards a more adaptive and sustainable approach to learning (Salmon, 2020).

Since the onset of Covid-19 in March 2020, organisations and institutions have been forced to adapt and overcome all of the obstacles posed by the pandemic. In response, educational institutions in particular had to adopt a more agile approach to swiftly implement alternative teaching methods. Paudel (2021, p70) stated that 'To mitigate the direct impact of the virus and prevent the students from being psychologically depressed, educational institutions have initiated the momentum of educating the students through different means and modalities based on both human and material resources available in the context'. The greatest challenge here was how to do this quickly and effectively whilst making full use of the resources available. SE2 from the semi-structured interviews stated that:

"The Covid crisis has brought up lots of problems and I think these are problems that we're lurking now beforehand. But of course, the obvious one was the fact that we all had to go online very quickly and you know, people tend to ignore other unforeseen consequences, I mean the whole thing about the delivery of course is being very much thrown to the fore".

In addition to this agile approach being forced on the institutions, a huge amount of change was required that involved everyone needing to learn and become fluent with technology that most had not previously encountered.

5.11 Semi-structured interviews – data collection 3

As shown in chapter 4 the semi structured interviews conducted with the 12 academics and professionals highlighted a number of issues and concerns but also constructive thinking into the possibility of adapting lean within the HE administration processes. As per the framework established to analyse the interviews, each of the elements did in fact connect to the themes extracted during the interviews but also the ideas raised within the interviews on the thoughts on how change itself can be incorporated into higher education we're all key items in a topical agenda that was formed as part of these semi structured interviews. Surprisingly a number of the participants had previous knowledge of lean and agile, some specific cases had been part of lean initiatives either with current employers or certainly with previous employers in terms of the professionals interviewed. The knowledge and understanding demonstrated was seen as a positive element for the research, this then establishing a base for further exploration in terms of thoughts, ideas, suggestions and perspectives for the adaptation of a lean philosophy within higher education partnerships. As the themes emerged from the interviews it soon became clear that the thought of a system being introduced into an institution where historically processes had remained consistent for a number of years, had in fact shown interest that again would suggest a positive alignment to the adaptation of lean within HE collaborative partnerships.

This third phase of the data collection was extremely useful in completing the triangulation adopted for examining thoughts ideas and opinions at three different points in time during the research process but also with three different groups of participants all being academics and professionals. The interesting part of this 3rd element of data collection was how participants were keen to know more and to want to express their opinions on how processes had been conducted to date, but then how things could change. the likelihood of that change, and the outcomes and benefits of that change. Change of any kind is never an easy process but in order for it to be successful there are a number of factors that have to be planned, considered, discussed and then implemented, followed by constant monitoring to ensure if the change did in fact have an impact and how much that impact actually made a difference.

The questions used within the interviews were intended to extract information that would; 1 – confirm that the correct participants had been selected for this purposive data collection (12 being a relatively small number), 2 – examining if the participants were in fact advocates of change or if they were against it, 3 – knowledge of the processes and if they had ever considered how they could be changed, 4 – process improvement and if lean was an option,

5 – crisis management and Business Continuity Planning (BCP), examining the attitude and thought process behind forced or urgent change and 6 – looking forward at how delivery in HEI's may change.

Question 1

As the strategy for this research and data collection was grounded theory, purposive, snowball and qualitative, the hope (and intention) was that all 12 participants chosen had some degree of prior knowledge of the topic. The hope was realised, and all participants had some background knowledge and, in some cases, experience of lean and agile, *SB4* stating "Looking at how processes can be made more efficient, more streamline, a lot less activity, a lot less kind of movement of information and data and just really try and kind of streamline with more lean processes". What was most surprising overall is the level of appreciation for what lean can achieve if adopted correctly. All participants appeared to have a positive outlook and opinion about the idea of change and that this should have happened a lot sooner.

Question 2

This question was included with the aim of eliciting as much detail as possible about the participants views on change and if indeed they considered a need for change or improvement. Again the responses were surprising, reassuring and overwhelmingly positive towards a philosophy whereby change and improvement were commonplace. As mentioned in chapter 4, Kakouris et al, (2022) refer to 'Lean thinking', a term used more frequently over the past decade is being seen more often as a way to resolve the issues of efficiency and quality, not just in the automotive industry but more recently in higher education. *SB11* supported this opinion by stating that "we do need to change and that is essential, change will definitely be better than what we've got already". Several other participants expressed a similar perspective that change should indeed be a commonplace and a primary focus. Verhulst and Lambrechts (2015) also referring to this as 'sustainable development' but highlighting how barriers within HEI's have thus far limited the progress.

Question 3

The focus of chapter 3 was to examine and explore participants understanding of the role they played within the collaborative partnership and how well they knew the processes that were in place to facilitate this. Lean in any operation is a significant factor that is the focus of any change initiative within a process or a group of processes, therefore, this question aimed to examine the depth of knowledge to ascertain if they had associated any type of change with a process that they were familiar with or maybe even had ownership off. *QA10*

highlighted the fact that, not only were they familiar with the processes, but had been actively looking at ways to improve them, stating that:

“Yes. In fact, we are currently looking at improvement in the communications process between the collaborative partner and ourselves, for example, when they want information, let's say a student contacts them about something which should be dealt with by us. We could create a central point where they send that e-mail to QA and then the monitoring of that central point will then distribute it to the right person within QA. So one person doesn't think someone else is dealing with it when someone else is thinking the same. Because the knowledge that we gather from centralizing that process, we can see common themes which are occurring and then we can implement changes and improvements to prevent any issues from arising based on those common themes. So that's one of the things that we're looking at”.

In chapter two Emiliani (2015) highlighted that applying lean to Higher education institutions administration functions is inherently complex. However, and in contrast to this, Radnor and Bucci (2011) used Plymouth University as an example whereby lean was implemented successfully within their administrative processes, helping to achieve significant cost savings and efficiency.

Question 4

This question was included to extract information from the participants about how they may see the concept of Lean being incorporated into the processes that they use on a daily basis. The idea was to encourage interviewees to connect their knowledge of Lean and Agile with the processes that they are specifically part of, this hopefully helping to inspire thoughts and ideas for change or resurrect any ideas that they may have had previously but have not taken any further. The question then went on to elicit thoughts around the benefits that change could bring to the collaborative partnership and its processes, concluding in asking if they thought that the HE sector was ready for such change.

When posed with the question of whether or not a Lean approach could be adopted in the processes used, QA10 stated that:

“one of the things I'm quite conscious of is the fact that we operate a very manual process as it relates to the compilation of Marks and feedback and all of that to submit to partners and I think there is a lot of time is spent working on those

processes, which, if we could get some of those automated then the amount of money that we spent for staff working on those, they could redirect that time to something else and the process would be quicker so it would relieve stress and anxiety from people during the time of compiling those grades, so I think that area is one of those that I believe requires some attention”

The concluding part of question 4 asked if the participants thought that the HE sector was ready for change. The responses were surprisingly varied and could be differentiated by three categories, some expressed a definitive ‘yes’ (approximately 42%), others contradicted this belief with and conflicting ‘no’ (approximately 20%) and the remainder (38%) were a little more conservative in their answer by stating that “I think there is definitely more understanding of the needs to change because I joined two years ago, we were still in lockdown. I think it was like second or third lockdown, But I don't think that there is an awareness of where to go with the change and how to implement it” (SB4).

Question 5

The penultimate question was based around the pandemic period and related to crisis management and business continuity planning (BCP). Ironically this topic was the main theme for the individual surveys conducted as part of data collection 2, the outcomes also being used as part of a developmental paper in a 2022 BAM conference. What this question posed was the idea of suddenly having to amend the way of working or operational elements of HEI's and whether or not there was a plan of action.

Surprisingly the positive answers to this were quite limited as most were honest enough to admit that there wasn't any formal plans in their institutions, or if there were, they were not aware of them. This led the way to assume that responses and reactions to the sudden impact of Covid-19 were radical and reactive but at the same time both agile and lean.

QA4 explained that he knew that his institution had such a plan but was unfamiliar with the actual details of such a plan, comparing the “large scale response needed to address Covid” with a much smaller reaction needed if a member of staff “suddenly becomes sick and there's an urgent need to find a replacement”. He proceeded by stating that:

“I could conclude that they might not be fully prepared for the radical changes. I mean things happen more quickly in the private institutions, for the government institutions that so the main universities, I should say, because of the more

bureaucracy and the hierarchy and the process that things need to go through sometimes do take a long time" QA4.

Reflecting on her own experience of the crisis *SB11* explained "if there's a train strike, we can go online in a day which I think we never would have been able to do pre-pandemic". *SE2* had a slightly different perspective suggesting that "the COVID crisis has brought up lots of problems. I think problems that we're lurking now beforehand, the obvious one was the fact that we all had to go online very quickly, people tended to ignore other unforeseen consequences, the whole thing about the delivery of course is being very much thrown to the fore, I do think that this is something that hadn't been worked through".

Question 6

The final question in the interview process was based on what participants defined as the way forward, now that the pandemic had challenged the status quo, and all HEI's and their partners had been effectively forced to change their operational and delivery formats. It would be fair to say that most alluded to the fact that any changes made during Covid were here to stay with limited components resorting back to their original state.

SE5 suggested that "some institutions had already implemented some online teaching and learning, but I think Covid made our University realise that it can't happen in the next few years, it needs to happen now, and I think the fact that it did happen made both academics and administrative teams realise that it wasn't as hard as they had originally thought. I think they're more prepared now after Covid, as I said earlier, just because Covid made them realise that when decisions need to be made quickly, they can be made quickly".

SE8 added that "Responding to the challenge and adjusting its regs and working out what to do differently was a challenge but having said that, you could argue it wasn't surprising at all because we had to do that or die. Were we fully prepared? No. How prepared are they now? You have to ask the people at the top and the problem is you won't get a truthful answer out of them because they'll always tell you they're very well prepared, whether they really are or not, I don't know. The truth is that a lot of other institutions did respond reasonably quickly. I was part of the change. How did it impact me? It impacted me because I had to learn some new skills, particularly around use of technology, I had to change the way I did certain things that I'd done for years like classroom teaching. I had to learn to teach virtually, make minor adjustments to things like assignment to reflect the nature of how we were having to go

about doing things. It forced us all towards a bit more of relevance of a blended learning approach”.

5.12 Chapter summary

This chapter discussed the data collection findings and their alignment to the overall aim of establishing if there is basis for the adaptation of a lean approach into HE, particular that of collaborative partnerships and the exchange of information. The findings indicate that, whilst change initiatives and ideas around lean adoption were often considered, the ability to action them was extremely limited. These limitations were often referred to by the stakeholders involved in the data collection as constrained by bureaucracy and a tendency for institutions to remain doing things in the same way that they have done for many years.

Relating back to research objective 1 which looked to identify if there were any similarities or differences in stakeholder views towards the need for improvement in HE collaborative partnerships, the findings of data collection 2 and 3 would strongly suggest that there are may similar thoughts, ideas and aspirations to change the processes engaged with. The answers given by participants would point to the fact that change was long overdue but as shown during the initial period of Covid, there are real benefits to be gained, to the point where changes made during the pandemic remained in place even once things reverted to ‘normal’. In essence this could support elements of the conceptual model (Fig....below) whereby, both the ‘readiness’ and ‘capabilities’ elements have been proven under a forced situation such as Covid.

Objective 2 that looked to establish if a consensus would indicate that a lean approach to the process of information exchange could be adopted, was again confirmed by the very fact that processes were changed as highlighted in chapter 6 as a direct result of the pandemic and the urgent need to maintain information exchange and integrity through such a turbulent period (supporting the 3rd element of the conceptual model). Stakeholders involved with the processes were readily willing and able to make necessary changes to maintain the integrity and quality throughout. As with the discussion of objective 1 above, the changes were successfully made, benefits clearly shown, relating to objective 3 (see chapter 6) and retained (re-frozen) as referred to in the theoretical change model by Kurt Lewin in chapter 4.

In relation to the final objective (4) which looked to explore the readiness of change within the HE sector, specifically within collaborative partnerships, the pandemic has demonstrated

that, whilst a crisis management plan or BCP approach was not necessarily clearly communicated, when change was required, it was achieved. What these actions appear to have demonstrated with little argument, is that the institutions, whilst have no formal, widely communicated and clearly understood readiness plan, it has staff who were willing and very able to make relevant and timely process changes.

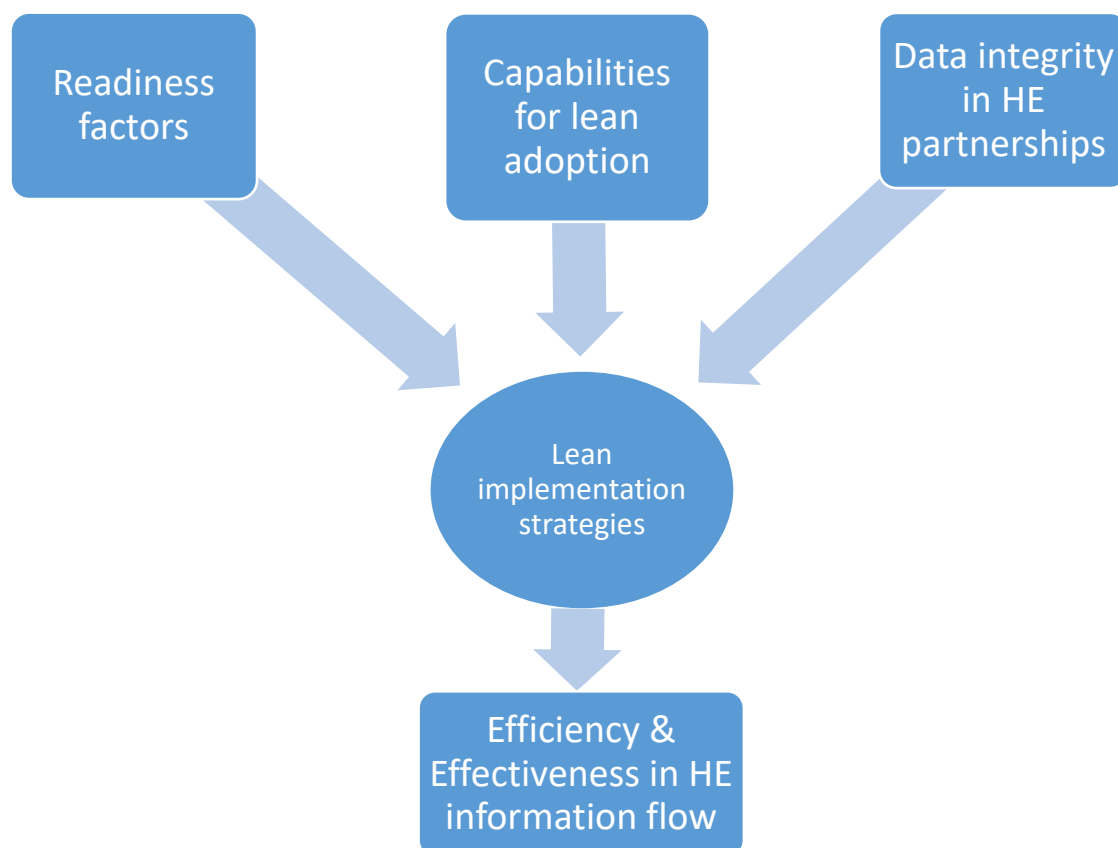


Fig 1: Conceptual Framework

A final point to make within this summary would be to suggest that these findings could be built on further by additional research that would look to embed the conceptual framework into an institution as a working model. Resources or teams could be allocated the elements as targets or goals and progress monitored over a period of time. Overall this chapter has shown that the aim of this research and the objectives set are realistic and if explored further, could form the basis of a lean approach within HE collaborative partnerships.

Chapter Six: Interim Implementation and Evaluation of recommendations in a selected case study

6.1 Introduction

During the process of writing this thesis a major event happened that impacted the whole of the education sector, and indeed all sectors and industries, forcing changes that nobody fully expected. In addition to this the author also became tasked with planning, designing, implementing and facilitating a strategy for the teach out of one of the collaborative partnerships that had been working with the company for a number of years. In March 2020 the World Health Organisation (WHO) declared Covid-19 as a global health emergency, later that month confirming it to be a pandemic (Katella, 2021). As a result of this pandemic, the UK and most other world governments ordered a complete shutdown of all Businesses, Schools, Universities and any other social entity that required people to interact, the aim being to limit the opportunity to transmit the virus that was then defined as Covid. The teach out plan, the respective University partner and the pandemic are all part of this case study which will examine a time period of 2020 to 2025. Comparative details, data and processes will be explored, these being involved in the operational elements of the collaborative partnership over this period of time. The outcome will demonstrate how both change and agile could have a permanent place within the HE sector.

6.1.1 Pre – March 2020

The case study University first began as a collaborative partner in September 2015 with an initial foundation year level 3 intake followed by progression and further cohorts through academic years 1,2 and 3 (levels 4-6 inclusive). In addition to this, and as the student numbers grew, there were further and ongoing intakes at academic years 3 (Foundation year) and 4 (Year 1) at three starting points each year, these being January, May and September. Between 2015 and March 2020 the student numbers progressively grew to just over 4000. Each academic year consisted of two semesters, 3 modules in each semester, exam boards following the completion of each semester and a final academic exam board at the end of each year to ratify outcomes and progression. The marking and exam board process in a university is a crucial part of academic quality assurance, ensuring that students are assessed fairly, consistently, and transparently. This process involves multiple stages, various people and teams, and an exchange of data and information that is crucial to the overall success of collaborative educational partnerships.

6.1.2 The Status Quo

Prior to the pandemic in March 2020, the marking, moderation and exam board process at the main campus for this partner were aligned to that of most other mainstream Universities whereby a traditional set of activities were adopted and operated sequentially at the end of each semester. These activities typically include the following:

Setting Assessments

At the beginning of each the academic year or semester, academic staff design or adapt assessments such as exams, coursework, presentations, or projects. These assessments are aligned with the learning outcomes specified in the module or course handbook. Once drafted, assessments often undergo an internal moderation or scrutiny process, this entailing other academics, usually with expertise in the subject, to review the assessment making sure that it is appropriate in terms of level, scope, clarity, and fairness.

Marking

After students complete their assessments and submit to the relevant platform, often a Turnitin icon in their VLE, marking begins. As soon as the deadline has passed the Module Leader (ML) will check to see if all students have submitted. A number of universities follow a process of *double marking* or *moderation*. In double marking, two academics independently mark each piece of work blindly i.e. not seeing each other's until the process is complete. In moderation, one marker assesses the work and a second checks a sample to ensure consistency. The purpose of these practices is to reduce subjectivity and maintain standards across markers and modules. These criteria are designed to make clear what is expected of students and how their work will be judged. Each piece of work is given a numerical score or grade according to these criteria which are also part of a guided criteria or rubric.

Internal Moderation

Once marking is complete, internal moderation takes place. The moderator checks for consistency in marking across a sample of work, typically focusing on borderline grades or discrepancies between markers, this partnership working with 10% or 10 scripts as a minimum sample. If inconsistencies are found, discussions are held to agree on final marks. The goal here is fairness, ensuring that students receive marks that accurately reflect their performance.

External Moderation

Once the internal moderation is complete within the partner, the same sample is then identified by the University so that they can then initiate an external examiner to also moderate the same sample, looking for marking fairness, quality and consistency.

Exam Boards

After the marking and moderation processes are complete, results are prepared for an exam board. This particular University held pre-exam boards as well as actual exam boards a few days after. The idea was that pre-exam boards served to identify and correct any errors so that the main exam board would flow smoother as it ratified the results. Exam boards are composed of academic staff, administrators, and external examiners. They meet formally and all decisions must be documented and justified.

External Examining

A key quality assurance step in UK and many other universities is the involvement of an *external examiner*. This is an academic from another university who reviews samples of student work, marking, and overall module performance. The external examiner ensures the university's academic standards are in line with national expectations and that marking is fair and accurate. They submit a report at the end of the year, which often includes suggestions for improvement.

Release Publication of Results

Once confirmed by the exam board, results are released to students through secure online portals. If a student feels there was an error or unfairness in the marking or process, they may be able to request a review or appeal. In summary, the marking and exam board process is designed to uphold academic integrity, fairness, and consistency, ensuring that all students are assessed according to clear, equitable standards.

All figures included are based on an intake of 300 students as this was the average number based over 3 cohorts in the focussed academic year (January, May and October 2020). Since that period, student numbers have increased so it may be correct in assuming that any savings shown here have been enhanced even further. In terms of the actual marking process, all markers had 20 working days to 1st mark their scripts. Periodically the ML will check that the markers are progressing with their marking and that the 20 day deadline will be met. If there are any issues impacting the marking, the ML will make arrangements to ensure that the deadline is still met, this may involve re-allocating the marking. With this

particular University partner it was common place to have a pre-board, exam board, resit board, retake board and an (Awards & Progression) A&P board.

A pre-exam board was held following the completion of each and every semester to check each student's status in terms of submissions, grades awarded and to address any anomalies. Following this an actual exam board took place 7 – 14 days later that officially ratified all student outcomes. This exam board then identified any students needing to resit modules, whereby a 4 week period of support was offered to assist the students to complete and submit their resit. On completion of submission, marking and moderation, these resits were then taken to their own exam board and the process was repeated. Should however, any students still fail the resit (s) and subject to the University regulations, module retakes were offered at the next convenient point in the academic year or in some cases, in the next academic year. These outcomes then potentially being take to another exam board.

The time, cost and effort required and allocated to this multiple and repeated process was quite excessive. Each board was conducted face to face at the main campus in London and required an average of 10 staff to attend each time. The team consisted of an Associate Dean, Programme Leader (s), Heads of Years (1-4), Registry staff (2), programme admin staff (2). Taking this amount of staff out of the business for whole days at a time had a significant impact on efficiency.

Table 6 below shows process 1 (marking and moderation) prior to the pandemic as per the status quo mentioned in 6.1.2 above. The details used illustrate the operational and delayed activities conducted by the module leader (ML), moderator and the registry team. Each activity or step is listed along with the time taken to conduct each element of the process.

Table 6: Prior to March 2020 - Process 1 – marking and moderation

Step	Action	Responsible	Time
1	Log non-submissions via VLE	Module Leader (ML)	60 min
2	Divide submissions among markers	ML	60 min
3	Send marking allocation to markers	ML	45 min

Step	Action	Responsible	Time
4	Progress check with markers	ML	60 min
5	Select impartial moderator	ML	10 min
6	Send 10% sample to moderator	ML	30 min
7	Complete moderation form	Moderator	60 min
8	Return form to ML	Moderator	10 min
9	Input grades & changes into Excel	ML	180 min
10	Send grades to Registry (main campus)	ML	10 min
11	Await Registry response	Registry (main campus)	3 days (1350 min)
12	Apply final changes pre-exam board	ML	120 min

Summary of timings

Adding all of the timings for the stages of this process together, the total time taken as shown below is 1995 mins or 33.25 hours.

- **Operational total (ML & Moderator):** 645 min (10.75 hours)
- **Registry delay:** 1350 min (22.5 hours)
- **Total:** 1995 min (33.25 hours)

Similar to table 6 above, table 7 below shows process 2 (exam boards) prior to the pandemic as per the status quo mentioned in 6.1.2 above. In this table the details used illustrate the operational, decision making and information exchange activities conducted by the QAHE team, the chair of the exam board and the registry team. Each activity or step is listed along with the time taken to conduct each element of the process.

Table 7: Process 2 – exam boards

Step	Action	Responsible	Time
1	Pre-exam board	QAHE Team	300 min (avg)

Step	Action	Responsible	Time
	The Team from QAHE work through each programme, level and module, carefully reading out each student name and associated result.		
2	Students with a complex profile are discussed in detail and an appropriate outcome agreed	QAHE Team Chair & Registry (main campus)	120 min
3	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min
4	Exam board – takes place 5-7 days after pre-board The Team from QAHE work through each programme, level and module, ratifying the results or outcomes.	QAHE Team	120 min
5	On completion, a date is then decided to conduct the exam board for any resit students.	Registry (main campus)	10 min
6	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min
7	Resit Exam board The Team from QAHE work through each resit students' outcomes module by module and ratify the resit results.	QAHE Team	120 min
8	On completion, decisions are then made about further additional resits, retake opportunities or withdrawal from the course.	Registry (main campus)	60 min
9	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min

Adding all of the timings for the stages of this process together, the total time taken as shown below is 910 mins or 15.16 hours.

Summary of timings

- **Operational total (QAHE):** 540 min (9 hours)
- **Decision making (QAHE & Registry):** 190 min (3.16 hours)
- **Information exchange:** 180 min (3 hours)
- **Total:** 910 min (15.16 hours)

Tables 6 and 7 shown above illustrate the marking, moderation and exam board processes and their activities prior to any changes that were administered as a direct result of the pandemic.

Table 8 below shows process 1 (marking and moderation) following the reactive and agile changes made as a consequence of the pandemic. The details used illustrate the operational, decision making, information exchange and registry activities conducted by the module leader (ML), moderator and the registry team. As in table 6 each activity or step is listed along with the time taken to conduct each element of the process.

Table 8: March 2020 – January 2021 (Main Covid-19 period) - Process 1 – marking and moderation

Step	Action	Responsible	Time
1	Log non-submissions via VLE	Module Leader (ML)	60 min
2	Divide submissions among markers	ML	60 min
3	Send marking allocation to markers	ML	45 min
4	Progress check with markers	ML	60 min
5	Select impartial moderator	ML	10 min
6	Send 10% sample to moderator	ML	30 min
7	Change – A form was created that included comments boxes but also spreadsheets that contained pre-populated formulae	Moderator	30 min
8	Return form to ML	Moderator	10 min

Step	Action	Responsible	Time
9	Change – The VLE engineer at the main campus was able to develop an option that allowed a complete download of data that could then be copied into a spreadsheet	ML	60 min
10	Send grades to Registry (main campus)	ML	10 min
11	Change – The registry team at main campus were streamlined by having just one administrator allocated to the activity. This reduced the turnaround time significantly.	Registry (main campus)	1 day (450 min)
12	Apply final changes prior to pre-exam board	ML	120 min

Summary of timings

Adding all of the timings for the stages of this process together, the total time taken, following the changes made now show a total time of 905 mins or 15.08 hours.

- **Operational total (ML & Moderator):** 435 min (7.25 hours)
- **Decision making (ML):** 10 min (0.16 hours)
- **Information exchange (ML & Moderator):** 10 min (0.16 hours)
- **Registry delay:** 450 min (7.5 hours)
- **Total:** 905 min (15.08 hours)

Overall, and as a direct result of the adaptive and agile lean adoption within the process, the time saved is 1090 mins which equates to a saving of 18.16 hours (almost 2.5 days).

Again similar to table 7 above, table 9 below shows process 2 (exam boards) following the reactive and agile changes made as a consequence of the pandemic. The details used illustrate the operational, decision making and information exchange activities conducted by the QAHE team, the chair of the exam board and the registry team. Each activity or step is listed along with the time taken to conduct each element of the process.

Table 9: Process 2 – exam boards

Step	Action	Responsible	Time
1	Pre-exam board Change – With the onset of Covid-19 a change was immediately initiated due to the restriction on travel. All exam boards were moved from F2F to an online platform (Zoom) along with the number of attendees being reduced and allocated specific tasks and deadlines.	QAHE Team	180 min (avg)
2	Students with a complex profile are discussed in detail and an appropriate outcome agreed	QAHE Team Chair & Registry (main campus)	120 min
3	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min
4	Exam board – takes place 5-7 days after pre-board Change – With the onset of Covid-19 a change was immediately initiated due to the restriction on travel. All exam boards were moved from F2F to an online platform (Zoom) along with the number of attendees being reduced and allocated specific tasks and deadlines.	QAHE Team	90 min
5	On completion, a date is then decided to conduct the exam board for any resit students.	Registry (main campus)	10 min
6	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min
7	Resit Exam board Change – With the onset of Covid-19 a change was immediately initiated due to the restriction on travel. All exam boards were moved from F2F to an online platform (Zoom) along with the number of attendees being reduced and allocated specific tasks and deadlines.	QAHE Team	60 min

Step	Action	Responsible	Time
8	On completion, decisions are then made about further additional resits, retake opportunities or withdrawal from the course.	Registry (main campus)	60 min
9	Populated and amended exam board sheets are then disseminated to all relevant staff at QAHE and registry	Registry (main campus)	60 min

Summary of timings

Adding all of the timings for the stages of this process together, the total time taken, following the changes made now show a total time of 820 mins or 13.66 hours.

- **Operational total (QAHE):** 450 min (7.5 hours)
- **Decision making (QAHE & Registry):** 190 min (3.16 hours)
- **Information exchange:** 180 min (3 hours)
- **Total:** 820 min (13.66 hours)

Overall, and as a direct result of the adaptive and agile lean adoption within the process, the time saved is 90 mins which equates to a saving of 1.5 hours.

In addition to the time savings show in the tables above, there was a significant reduction in travel requirements during the lockdowns of the pandemic, this having a direct impact on the costs incurred. The total cost saving of this change was £532, this being realised for each of the 3 exam boards conducted within an academic year.

As the data above shows, changes made during the Covid period were able to reduce elements of time and cost. Focussing on the marking and moderation process, changes were made as a direct result of the pandemic and were related to enhancements to the moderation, availability and downloading of marks. These changes included the development and design of a standardised moderation form that contained a number of pre-populated fields. Once the form had been tested it was rolled out very quickly to all modules on all programmes. The time taken following this change reduced from 60 mins to 30 mins, a savings realisation of 50%.

The next change to be administered as a direct result of the pandemic was that of the VLE platform and its ability to support the possible download of marks data, enabling a much quicker process of preparing this for the main campus and the pending exam boards.

Originally the process took 180 mins but following significant changes and updates by the VLE engineer, the time was reduced to 60 mins, a saving of 66.6%.

The third change to be initiated within this process as a direct result of the pandemic and the imposed working from home rule (WFH), was related to the checking and return of grade sheets from the programme administration team at the main campus. This process had always been the most time consuming, taking 3 days as a minimum turnaround time frame. Covid-19 forced the main campus to be more creative with their staffing and re-distribute tasks that linked to partner universities. The original team of 4 were reassigned tasks in a way that allowed just one programme administrator to focus on the QAHE checks, allowing complete focus on the one without any overproduction or double handling (typical waste elements in any process). This change made a significant impact on the time taken to complete the activity and return the checked versions to QAHE. The outcome of these changes were a 66.6% reduction in the time taken to perform the process, this having a significant impact on the timeliness of this information exchange.

As with the marking and moderation process, the exam board activities also required change and agility as a direct impact of the pandemic. This university partner had 3 exam boards that were initiated at the end of each semester; 1 – pre exam board, 2 – actual exam board and 3 – resit exam board. Again, there were several rapid changes made following the lock down period of Covid-19.

The first change, and one that made a significant difference was the move from F2F exam boards to an online version using the Zoom platform. With restrictions on travel and the associated social distancing, all staff usually attending the exam board found themselves attending an online version but not only this, similar to that of the main campus, the number of team members involved were reduced through business process re-engineering (BPR) whereby the whole process itself was redesigned and streamlined based on the environment then seen as the 'new normal'. Staff numbers were reduced in favour of streamlining the processes that surrounded the exam boards.

As seen in the tables above, all 3 exam boards benefitted from the same process changes, collectively realising an average total time saving of 32.76% (40% pre-board, 25% exam board and 33.3% resit board). These savings would be made each and every semester as this sequence of events was repeated each time. In addition to these time savings, and

based on the restrictions of travel, there was also a monetary saving of approximately £1596 each semester for the combined 3 exam boards.

These overall savings of both time and money were a direct result of the university partner being forced to adopt change and agility in the way it operated. As mentioned in 5.4 these changes were deemed necessary as part of a reaction to the crisis situation (Sutcliffe and Weick, 2015), the decisions made, whilst hugely necessary, being identified as reactive in order to maintain a continuity of service rather than implementing a lasting pedagogical change (Bozkurt et al., 2020). This particular HE Institution, like many others, adopted an emergency remote teaching (ERT) strategy relying on pre-existing technological platforms with very little time for training of staff or students (Hodges et al., 2020). However, as the university partner and QAHE realised, this reactive phase was not sufficient for institutional transformation, instead, the main goal being operational survival and immediate service delivery.

As the Covid period eased and social interaction re-emerged, the partner university decided to maintain the changes that had been implemented and adopt these as a permanent operating model along with the improved process times and savings (shown below). In addition, and as an indicator that this period of change and agility had helped many to realise the potential that adopting this philosophy can bring, the partner continued to explore their own processes for further improvement. The next focus was that of the multiple exam boards and if there was scope to reduce, combine or streamline this in some way. The decision made was to offer 'in year resits', effectively eliminating the resit exam board completely and taking two sets of results to the next exam board. This confirmed that the university partner had begun its own active approach to continuous improvement, lean and agility.

6.1.3 Application and validation of the conceptual model

In this scenario the changes that the partner university encountered and was obliged to adopt, although reactive, were, in part, aligned with some of the elements of the conceptual model shown below. As suggested by O'Reilly et al (2018) in a chapter 4, the interest in this

philosophy has now grown with an increasing number of higher education institutions becoming more actively involved in its potential benefits and that a more systematic approach is required if the HE environment is to fully embrace this philosophy. O'Reilly also suggested building an appropriate conceptual and guiding framework. In support of this suggestion by O'Reilly, Anthony et al (2012) identified a set of critical success factors (CSF's) that would aid the implementation of lean, whilst Albliwi et al (2014) offered a set of key readiness factors that would also support this initiative.

Readiness Factors

Readiness for any type of change is a construct that would be difficult to quantify and even more difficult to show or demonstrate. Organisational readiness for change is more about willingness, motivation, determination and desire that operates on multiple levels, with readiness varying across individual, group, unit, department, or organisational tiers (Weiner (2020). Examining and comparing the words of Weiner against the actions of the university partner in this situation would almost certainly qualify for the staff being willing, motivated, determined and having the desire to succeed. The very fact that they were able to move all of their teaching online within a relatively short period of time would support this. In the semi – structured interviews *SB4* stated that “The need for change or improvement can always be identified. I think I’d agree to it in a fashion, but I suppose it depends on the role that you do and how close you are to the detail and how, what your understanding is of the output of something and how you reach that output as to whether something is easily identifiable”. This comment suggesting that readiness is an intrinsic trait that simply needs to be understood.

Lewin's change model also refers to the readiness factor, emphasizing the importance of psychological readiness and cultural alignment but also alluding the concept of “planned change” in order to differentiate deliberate, structured change efforts from those that occur spontaneously, accidentally, or are externally imposed upon an organization (the pandemic). Although the changes made during the pandemic weren't planned, psychologically and culturally the staff knew they had to adapt to the uncertain environment. The psychological factor in addition to a behavioural preparedness and willingness (and ability) to act were also key factors referred to by Sweeney and Whitaker (1994).

These points would suggest and align with keeping readiness factors in the conceptual model as a key success factor although further definition or boundary ideals may need to be established to be more effective.

Capabilities for lean adoption

Validating this element of the conceptual model was a little more complex as adopting lean principles within an organisation necessitates a multifaceted approach that encompasses strategic planning, cultural transformation, and the development of specific capabilities. Such capabilities would significantly require the full understanding and appreciation of the philosophy of lean management, the main emphasis and focus being on the elimination of waste, continuous improvement, and the delivery of value to customers, in this case, the students. As previously mentioned, lean principles originated in manufacturing but their applicability has extended to a more widely spread number of sectors including healthcare, information technology and services. The adoption of lean methodologies involves a significant transformation in organizational culture, processes and employee engagement.

During the onset of Covid it would be fair to say that rapid transformation was required in terms of the operational delivery of educational courses, but this was not necessarily a culture transformation. Instead, it was more of a reaction to a situation that required an immediate solution, not necessarily a long-term one but one that would satisfy the needs of all HE institutions and their partners from a continuity perspective. In the interviews conducted as part of data collection 3, the ideal of crisis management and business continuity planning (BCP) was explored with a mixed resulting outcome. This element of the conceptual model needed validation through a combination of several characteristics as shown below:

Leadership and Top Management Commitment and knowledge

Effective leadership is paramount in steering the organisation through the lean transformation journey, but this can only be effective if they possess the knowledge to do this. Leaders must not only endorse lean principles but also actively participate in their implementation throughout the whole process. Their commitment sets the tone for the whole organization, influencing employee attitudes and the overall success of lean initiatives. SE2 stated that “I guess no matter what you whatever badge you put on it, it's still a group of

people making a decision, isn't it? So regardless of the badge, this is what they're doing. They're trying to manage this crisis in the best way they can.

Organizational Culture and Change Readiness

As referred to in the previous element of the model, culture that embraces change, continuous improvement and employee involvement is conducive to lean adoption. Organizations must identify potential resistance and develop strategies to address it. Factors such as open communication, trust, and a shared vision contribute to a culture supportive of lean principles. The outcome of the pandemic and the lessons learnt were referred to by SB9, saying that “Now we keep have to doing that due to a number of reasons such as strain strikes and from one day to the next. You know we have to switch to on online delivery. So obviously that involves preparation and a quick reaction on the part of several stakeholders such as the online learning team setting up quickly links extremely quickly. The lecturers making sure that their sessions are suitable for online engagement”. The participant was eluding to the fact that the pandemic was a lesson that all HEI's now share and that smaller, less impactful crisis have since occurred but the institutions now take these in their stride and adapt much quicker (agile) but in a more formally planned way,

Employee Engagement and Empowerment

Lean implementation relies heavily on the active participation of employees at all levels. Empowering employees to identify inefficiencies and contribute to process improvements fosters a sense of ownership and accountability. “I think they're more prepared now after COVID, as I said earlier, just because COVID made them realize that when decisions need to be made quickly, they can be made quickly (MB6).

Communication and Information Sharing

Transparent and effective communication channels are vital for disseminating information about lean objectives, progress, and outcomes. Regular updates and feedback mechanisms ensure that all stakeholders are informed and engaged. Effective communication also facilitates the sharing of best practices and lessons learned across the organisation.

Process Management and Continuous Improvement

A core component of lean is the continuous assessment and improvement of organizational processes. Implementing tools such as value stream mapping and root cause analysis enables organizations to identify inefficiencies and develop targeted solutions. Establishing a culture of continuous improvement ensures that lean principles are sustained over time.

Technological Support and Infrastructure

The integration of appropriate technologies can enhance the efficiency and effectiveness of lean processes. Information systems that facilitate data collection, analysis, and reporting support informed decision-making. Investing in technology infrastructure ensures that lean initiatives are scalable and adaptable to changing organizational needs.

The challenges in lean adoption

Despite the benefits of lean methodologies, organisations may encounter challenges during adoption. Common obstacles include resistance to change, lack of management support, inadequate training, and misalignment between lean initiatives and organizational objectives. Addressing these challenges requires a proactive approach, including stakeholder engagement, clear communication of benefits, and the development of a supportive organizational culture. Successful lean adoption is contingent upon the development and integration of specific organisational capabilities. Leadership commitment, a supportive culture, employee engagement, effective communication, robust process management, performance measurement and technological infrastructure are all critical components. In fostering these capabilities, organisations can navigate the complexities of lean implementation and achieve sustained improvements in efficiency and effectiveness.

This second element of the model still needs more development and structure. Capabilities are built through practice, education and an overall understanding of what needs to be achieved and how. The characteristics above, whilst existing in some small way following the pandemic, there are still many more lessons to learn. For this reason the capabilities of a HEI and any partners would need to be fully versed in the philosophies of lean and how applicable they are in situations faced.

6.1.4 Data Integrity in HE partnerships

In the contemporary landscape of higher education partnerships between private and public educational institutions have become increasingly prevalent. Ensuring data integrity within these partnerships is paramount as it underpins the reliability of shared information, compliance with regulatory standards and the overall success of collaborative endeavours. Data integrity refers to the accuracy, consistency and reliability of data throughout its lifecycle. In the context of HEI's and their partnerships, it ensures that information exchanged between institutions remains unaltered and trustworthy. Maintaining data integrity is crucial for informed decision-making, preserving institutional reputations, and upholding the quality of academic and administrative processes.

Higher education institutions often employ varied data management systems leading to inconsistencies in data formats and standards. University X in this scenario had systems that did not integrate with their partners causing discrepancies and compromising data integrity. An example of this is where data is attempted to be shared across different systems and formats, resulting in mismatched records, affecting student mobility and joint programme administration.

To achieve and sustain data integrity HEI's and their collaborative partnerships must navigate a complex web of data protection regulations such as the General Data Protection Regulation (GDPR) in the European Union and the Family Educational Rights and Privacy Act (FERPA) in the United States. Ensuring compliance across different legal frameworks poses a significant challenge, necessitating robust data governance structures and mutual understanding of regulatory obligations. The increasing digitization of academic processes exposes institutions to cybersecurity risks. Data breaches can compromise sensitive information, eroding trust between partners and stakeholders. Implementing advanced security measures and fostering a culture of cybersecurity awareness are essential to safeguarding data integrity.

With this scenario referring to only one such partner taken from a list of 7, achieving data integrity across these multiple and diverse systems, varying academic and quality regulations is even more challenging, again raising the question of whether this element should remain in the model. However, data is a constant and one that we cannot simply move away from so dealing with this in a way that ensures compliance across different legal frameworks poses a significant challenge, necessitating robust data governance structures and mutual understanding of regulatory obligations

6.1.5 Lean implementation strategies

Implementing Lean strategies within organisations necessitates a comprehensive understanding of its principles, tools and the challenges that may arise during the process. Lean methodology rooted in the Toyota Production System emphasises waste reduction, continuous improvement, and delivering value to customers. The conceptual model requires that lean principles are fully understood, focussing on maximising customer value while minimising waste (Womack and Jones, 2003).

Implementing Lean strategies necessitates a holistic approach encompassing tools, cultural transformation, and leadership commitment. Adhering to Lean principles and addressing potential challenges proactively, organizations can achieve enhanced efficiency, reduced waste and improved customer satisfaction. These principles including Value Stream Mapping (VSM), 5S Methodology, Just-In-Time (JIT) and Kaizen (Continuous Improvement) are all pivotal tools in lean implementation (Rother and Shook, 2003; Hirano, 1995; Ohno, 1988; Imai, 1986 and Liker, 2004).

Lean implementation strategies are varied and will need careful selection in order to establish which ones are most appropriate at each point of the lean implementation journey. As with any kind of change, there can be an element of trial and error whereby chosen strategies may not offer the desired outcome. This is why performance monitoring is necessary. In figures 3-8 above there may well have been other options to achieve similar efficiencies but in this case scenario, the ones chosen were most suited at the time. This element of the model should remain.

6.1.6 Efficiency and effectiveness in Higher Education information flow

In the dynamic landscape of higher education, the efficient and effective flow of information is paramount to institutional success. As universities, colleges and private educational institutions grapple with increasing demands for accountability, transparency and performance the management of information becomes a critical factor in achieving educational objectives (Khamdamov et al. 2020). Efficiency in information exchange flow refers to the optimal use of resources to ensure the timely and accurate sending and receiving of information across various departments and stakeholders within an institution or institutions. Effectiveness, on the other hand, relates to the degree to which the information being exchanged contributes to achieving the institution's strategic goals such as enhancing student learning outcomes, facilitating research or supporting administrative functions (Wen,

2024). Together these concepts underscore the importance of not only streamlining information processes but also aligning them with the institution's mission and objectives.

As previously mentioned, many HEIs operate with information systems that lack integration, leading to inefficiencies. This fragmentation hampers the seamless exchange of information, resulting in redundancies and inconsistencies that can affect decision-making processes. Although some HEI's and their partners may have begun to adopt some form of application for information-based education and teaching systems, achieving constant outcomes that support the overall integrity required, there are still many shortcomings in such systems (Chen, 2024). Chen concludes saying that it is also necessary to deeply understand the development reality whilst promoting resource sharing based on information flow integration.

Data Quality, Integrity, consistency and reliability is a constant challenge. Inaccurate or outdated information can lead to misguided decisions affecting academic planning, resource allocation and student outcomes. Adopting integrated information systems could significantly improve efficiency by facilitating real-time data sharing across departments. Establishing standardized data entry, storage, and retrieval protocols will also ensure consistency and accuracy across the institution. Engaging stakeholders in the development and implementation of new information systems fosters a sense of ownership and eases the transition. Implementing data governance frameworks ensures that data management practices align with institutional policies and regulatory requirements. Such frameworks delineate responsibilities, establish data quality standards, and promote accountability.

Alvarez-Sández et al. (2023) stated that institutions implementing integrated information systems and robust data governance frameworks experience notable improvements in operational efficiency and decision-making capabilities. This same author also highlighted the positive impact of administrative process efficiency measurement in HEIs, emphasising the role of standardised practices and stakeholder engagement in achieving desired outcomes. Similarly the adoption of academic analytics has been shown to enhance student success by enabling early identification of at-risk students and facilitating targeted interventions (Campbell & Oblinger, 2007). The efficiency and effectiveness of information flow are critical determinants of success in higher education institutions. Addressing challenges related to fragmented systems, data quality, and resistance to change, and by implementing strategic measures such as integrated systems, standardization, stakeholder engagement, and robust data governance, HEIs such as this one can optimize their information management practices. Such enhancements not only improve operational

efficiency but also contribute to better educational outcomes, informed decision-making, and compliance with regulatory standards.

The implementation of a Higher Education Management Information System (HEMIS) is essential for ensuring effective and high-quality planning of administrative, educational, scientific, economic, and financial operations within higher education institutions (HEIs). Such a system facilitates the monitoring of the institution's targeted objectives and promotes seamless electronic data exchange among all stakeholders involved in the educational process within the higher education framework. The adoption of specialized information systems tailored for the higher education sector enables the comprehensive automation of institutional activities. This advancement will lead to the establishment of a unified database encompassing all types of higher educational institutions at the national level.

As the landscape of higher education continues to evolve, the integration of HEMIS is not merely a technological enhancement but a fundamental shift towards more efficient management practices. This system plays a pivotal role in streamlining processes and improving the overall quality of education. By automating routine administrative tasks, HEMIS allows educators and administrators to focus more on strategic planning and decision-making, which can lead to improved educational outcomes.

The implementation of some form of Higher Education Management Information System (HEMIS) is now a crucial requirement if HEI's and partnerships wish to develop their working collaboration into a more effective and efficient operation. Having more automated processes, creating centralized databases and fostering transparency and collaboration, a HEMIS would enhance the overall quality and efficiency of the education sector. As higher education continues to adapt to new challenges and opportunities, the role of advanced management systems like HEMIS will be increasingly important in shaping the future of learning and institutional success (Martins et al. 2019).

The conceptual model's purpose is to explore if, and how a lean philosophy could be adapted and adopted by the HEI's and their collaborative partners. This final element is key to the model so is justified and verified for this reason.

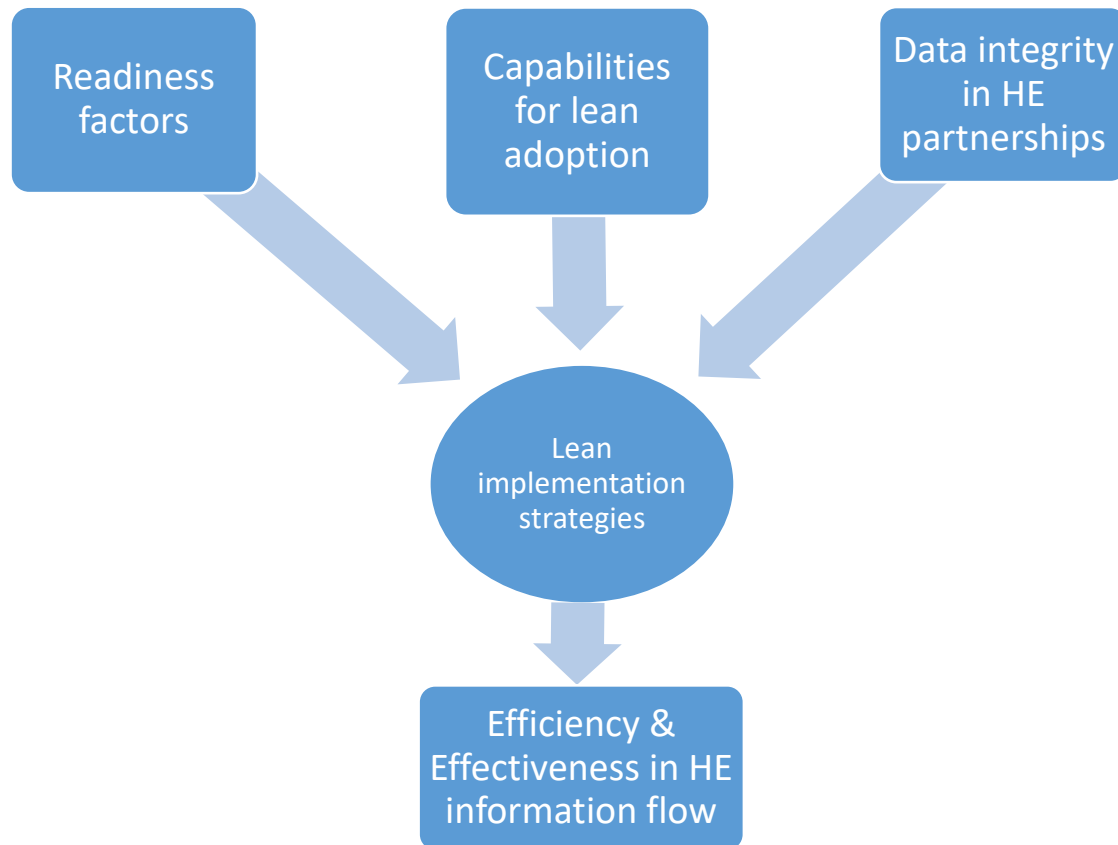


Fig 1: Conceptual Framework

6.1.7 Chapter summary

At the start of this research journey in 2018, there were no thoughts or considerations of a crisis such as Covid but there was hope that targeted individuals and institutions would at least take the time to consider the benefits of lean and agile within their processes. The original idea was still to interview key staff members at the University partners of QAHE but engage with a relatively straight forward data collection process that would, through the correct type of analysis, demonstrate that there was an appetite and willingness from the participants within the institutions. In addition to this, the questions used would also, optimistically, provide an insight into current or past experience of change initiatives and if any of the participants had actually engaged in any such activities.

What transpired was a very different set of ideas, activities and actions from those originally planned. The pandemic, whilst having many negative and saddening outcomes, offered the ability to prove, firstly that change is possible, secondly, that there are many benefits to change and thirdly, sustainability is achievable through the adoption of digital transformation within pedagogical endeavours, Jacques et al, (2023) publishing a paper entitled 'Post-

COVID-19 Education for a Sustainable Future: Challenges, Emerging Technologies and Trends’.

As the research began to progress through early 2020 the onset of Covid halted further development as the focus for all HEI's and their partners moved towards addressing the crisis and making changes to the delivery of all courses that they had, this case study HEI being no exception. All educational courses needed to be moved from a previously and historically face to face mode of delivery, to that of a 100% online mode of delivery. This was a significant and rapid change that required a reactive approach with agility, thought and careful consideration for the various options of the delivery. One of the biggest considerations of this change was using the correct platform to initiate the online delivery of all courses in addition to the assessment types that were usually required as part of a face-to-face delivery mode.

A huge consideration and part of the change initiative was the structure of courses, the planning of the delivery and also the training of both staff and students who had little or no previous experience of online delivery or receiving online education. In addition to this changes in assessments had to be considered, discussed and agreed with the partner university, this relating to assessments such as group presentations which were normally delivered in the classroom environment but also exams, specifically those around numerical modules such as maths or data analytics. This significant and rapid change involved a lot of work and collaboration with the university partner and with this particular university partner, QAHE were able to initiate the changes a lot quicker as well as training both staff and students in a formalised but well-structured manner that allowed 8000 students, previously taught face to face in a classroom environment, to be transferred to a purely 100% online delivery.

Another consideration and part of the changes required were that of material development. As stated by a previous author a lot of institutions especially this case study often assumed that it would be reasonable to use materials that were delivered face to face in classroom to then be delivered equally as well in an online environment. First hand experience quickly demonstrated and highlighted that materials previously delivered and created to be delivered in a face-to-face classroom environments were not fully compliant with the requirements to deliver online through a platform.

Chapter Seven: Conclusion and recommendations

7.1 Introduction

As mentioned in chapter one the aim of this research was to explore stakeholder perspectives on adapting and adopting a lean approach in higher education collaborative partnerships. The objectives included identifying stakeholder views on the need for improvement, assessing a consensus on lean adoption, examining potential benefits, and exploring readiness for change within the sector.

Overall research objectives:

- To identify any similarities and differences in stakeholder views towards the need for improvement in HE collaborative partnership processes
- To establish if a consensus would indicate that a lean approach to the process of information exchange could be adopted
- To examine what benefits might arise through an adoption of lean practices and principles in the HE sector
- To explore the readiness of change within the HE sector, specifically within collaborative partnerships

This study employed a qualitative methodology, specifically an informal focus group, online questionnaire and 12 semi-structured interviews, to explore stakeholder perspectives on adopting a lean approach in higher education collaborative partnerships.

7.2 Summary of main findings

The findings revealed were significant in that, leading up to the pandemic in March 2020, the data collection process was expected to reveal a healthy appetite for adopting lean, this stemming from the focus group held in the previous year. The onset of Covid triggered a reactive and agile change to how all educational courses were delivered for all institutions. Teaching moved from face to face to online delivery overnight using a varying number of platforms most suitable and available to each institution. In addition to delivery undergoing a rapid process of change, materials, normally created for classroom delivery, now had to be adapted to suit a remote delivery format. This chain of events since March 2020 has proven that change is possible whilst at the same time, developing a positive and sustainable attitude towards process changes going forward. The findings have also shown that

academics have realised that there are numerous benefits of change, all resulting in efficiencies for the institutions. Stakeholders of varying nature have experienced the ability of teams to reactively change a process that has been used for many years, to one that has seen limited use.

What has also come from these findings is the development of a conceptual model that has been assessed for suitability through a number of the chapters and would appear to have potential for the future. This research has developed through a period of 'status quo', uncertainty and reactive change, and the progress that has resulted is an updated version of what education practices and procedures now look like. Relating back to research objective 1 which looked to identify if there were any similarities or differences in stakeholder views towards the need for improvement in HE collaborative partnerships, the findings of data collection 2 and 3 would strongly suggest that there are many similar thoughts, ideas and aspirations to change the processes engaged with. The answers given by participants would point to the fact that change was long overdue but as shown during the initial period of Covid, there are real benefits to be gained, to the point where changes made during the pandemic remained in place even once things reverted to 'normal'. In essence this could support elements of the conceptual model (Fig 1) whereby, both the 'readiness' and 'capabilities' elements have been proven under a forced situation such as Covid.

Objective 2 that looked to establish if a consensus would indicate that a lean approach to the process of information exchange could be adopted, was again confirmed by the very fact that processes were changed as highlighted in chapter 6 as a direct result of the pandemic and the urgent need to maintain information exchange and integrity through such a turbulent period (supporting the 3rd element of the conceptual model). Stakeholders involved with the processes were readily willing and able to make necessary changes to maintain the integrity and quality throughout. As with the discussion of objective 1 above, the changes were successfully made, benefits clearly shown, relating to objective 3 (see chapter 6) and retained (re-frozen) as referred to in the theoretical change model by Kurt Lewin in chapter 4.

In relation to the final objective (4) which looked to explore the readiness of change within the HE sector, specifically within collaborative partnerships, the pandemic has demonstrated that, whilst a crisis management plan or BCP approach was not necessarily clearly communicated, when change was required, it was achieved. What these actions appear to have demonstrated with little argument, is that the institutions, whilst have no formal, widely

communicated and clearly understood readiness plan, it has staff who were willing and very able to make relevant and timely process changes.

To conclude this summary it would be pertinent to state that should the pandemic have not happened when it did, and the outcomes having such a significant impact on the way in which education was delivered, then maybe the overall outcome would not have been so positive. The objectives were met in a number of instances and examples, also covering answers to the research questions. Stakeholders have demonstrated how they perceive the need for change and improvement in HE by actively engaging in the process and ensuring that the future of HE partnerships is a much more collaborative one (RQ1). Research question 2 was addressed within chapter 6 by demonstrating how the processes were changed through the pandemic and how efficiencies, time savings and cost savings were observed. Finally, in answer to research question 3 around the preparedness of the sector for change, this too has been addressed to a point whereby being prepared is not always evident but that teams and individuals can still achieve the desired results through a willingness to succeed for the right reasons, in this case, the student experience.

7.3 Contribution to knowledge

The contribution that this research has offered could be defined as 'inspirational'. What the sector had previously seen as 'ideas for the future' were in fact forced into the present. Institutions knew that the future would require change and one that developed differentiated learning methods whereby pedagogical practice has no boundaries and technology was embedded into everything. This ideal for the future is now the current and the belief is that Covid-19 has forced and much quicker adoption of change in many ways and in varying forms. 2

The overall contribution to knowledge that has been gained through this research process is that change is inevitable. There will always be those who challenge this but ultimately the victor will be change. The practical but forced contribution during the pandemic has demonstrated that it can work and that there is data to prove its benefits through the case in chapter 6. There is empirical contribution from the multiple stakeholders across the university partners

The conceptual model developed and assessed through this process could be used to develop knowledge through the elements that it engages and how these are interpreted and

acted upon. An example could be that of the readiness factor of the model, suggesting that staff should be aware of any crisis management plans and be almost on a constant state of alert. In reality, and as also explained in chapter 4, readiness is not necessarily a visual and physical state so understanding what readiness actually means in a crisis context, may not always lead to a negative outcome.

7.4 Reflection on limitations

The findings indicate that, whilst change initiatives and ideas around lean adoption were often considered, the ability to action them prior to the pandemic was extremely limited. These limitations were often referred to by the stakeholders involved in the data collection as constrained by bureaucracy and a tendency for institutions to remain doing things in the same way that they have done for many years. It was commented that traditional universities tend to be run by longer term staff who had been in their roles for many years and were therefore reluctant to change anything. 'Complacency' and 'comfort' were the words used off the record, with such staff wanting to leave things as they had always been for many years. Bureaucracy and tradition had become the barriers to change but a divide was also evident in some cases whereby the new or 'less-senior' staff appeared to favour the thought of process improvement. During the data collection itself the limitations were more aligned to that of mobility. Once the lockdowns had been established, meeting with participants on a face-to-face basis was halted, remote communications and emails being the only option. Whilst this may have initially been seen as a limitation, it emerged as a favourable option with all interviewees. Apart from this restriction early in the research journey, gaining access and cooperation from university partners was very straight forward.

7.5 Implications for theory and practice

This research set out to explore if lean principles and practices could be adopted within the information exchange processes of collaborative HE partnerships. The data collection processes involved academics and professionals specifically chosen due to their past or present knowledge of improvement and in some cases, the use of lean philosophies. This section discusses the implications of the study for both theory and practice, highlighting its contribution to academic knowledge and practical relevance for any institutions or organisations engaged in collaborative partnerships.

Implications for theory

Traditionally lean thinking and application has been used within organisations focusing on internal processes with the aim to reduce waste. This study contributes to the theoretical knowledge and understanding of lean by extending its potential application into Higher Education collaborative settings, specifically the processes that are involved with information exchange.

The findings revealed that lean is not simply 'adopted' within collaborative partnerships, instead, adaptation processes are required to fit the context in which they are aimed to maximise the benefit. Whilst the urgency of the change led to a reactive approach, contribution to the contingency theory and the institutional theory were evident by showing how external pressures and the collaborative partnership characteristics drive lean adaptation.

Contingency theory offers a valuable insight for understanding institutional decision-making and management practices. It challenges the notion of a 'one size fits all' approach to management by asserting that the effectiveness of any strategy or practice is dependent on the specific context in which it is applied. This perspective would suggest that institutional success is determined degree of fit between managerial actions and situational variables. The main factors here being institutional structure, leadership style, technological capabilities, and the external environmental conditions such as market dynamics and regulatory pressures. In the context of this study, contingency theory provides a basis for understanding how and why institutions would need to adopt and adapt Lean principles differently when engaged in collaborative partnerships, particularly in relation to their own information exchange processes. This highlights the need for flexibility and contextualised decision-making, reinforcing the idea that successful Lean implementation across institutions is dependent upon a range of situational factors. Therefore, this theoretical oversight underpins the analysis of adaptation mechanisms required for lean adoption within these collaborative partnerships.

Institutional theory provides a framework for understanding how institutions are influenced by the wider social, cultural, and regulatory environments in which they operate. This emphasizes that institutional structures and their practices are not shaped purely by economic rationale or efficiency concerns but more about the influence of external forces. Institutions in this context refer to the formal and informal rules and social structures that ultimately govern institutional behaviour. These would include legal regulations, industry standards, cultural expectations, and professional standards. The main concept within

institutional theory describes the tendency for institutions within the same field to become increasingly similar over a period of time as they respond to the same institutional pressures. These institutional pressures present themselves in various forms including legal and regulatory requirements, the tendency to imitate, especially in conditions of uncertainty, and the professional standards that influence institutional behaviour. This theory also distinguishes between 'new' and 'old' institutionalism, the old, focusing on internal processes, whilst the new looks at the external environmental forces that shape the institution. institutional theory also offers a useful insight, examining how collaborative partnerships adopt and adapt Lean principles in response to external pressures and institutional expectations.

Through focusing on information exchange, this study highlights how lean can influence knowledge sharing behaviours, thereby contributing to institutional learning and knowledge management literature. The conceptual framework proposed integrates lean principles within collaborative partnerships information exchange processes, offering a theoretical basis for future researchers to explore lean implementation in other collaborative contexts.

Implications for Practice

This research provides actionable insights for managers involved in HE collaborative partnerships, offering guidance on how to adapt lean practices to suit the specific requirements and structures of their own partnerships. Institutions can utilise lean tools and techniques to improve the speed, accuracy, and relevance of information exchange across partners. Practical recommendations could include the following but this is not an exhaustive list:

- Engage stakeholders early
- Co-design processes with collaborative partners.
- Allow for flexibility in lean tool application.
- Establishing collaborative visual management systems.
- Co-developing standard operating procedures (SOP's) for information flow.
- Using lean-inspired feedback loops to address communication breakdowns.

Training programs should be adopted, maintaining a focus on developing lean competencies, particularly around information flow, collaborative problem-solving, and shared performance measurement.

This research demonstrates the mutually reinforcing relationship between theory and practice. The theoretical framework not only enhances academic understanding of lean adaptation in collaborative HE contexts but also provides a practical roadmap for institutions who are looking to improve their own information exchange through lean principles. This study makes a dual contribution: it extends the lean theory into the domain of HE collaborative partnerships, whilst also offering practical strategies for improving information exchange between institutions.

7.6 Future research

Future research could build on this study by testing the proposed conceptual framework in different HE collaborative institutions whilst exploring long-term impacts on partnership performance. Having concentrated on these 5 UK universities for this research, a future direction could be to replicate the research but across a wider spread of UK universities, maybe with colleagues from other universities, and then a similar process in another part of the world, comparing and contrasting the two sets of data. It may also be beneficial to adopt this across other countries too, increasing the body of knowledge even further.

Chapter 8: References

- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. and Fishbein, M., 1975. A Bayesian analysis of attribution processes. *Psychological bulletin*, 82(2), p.261.
- Al-Suqri, M.N. and Al-Kharusi, R.M., 2015. Ajzen and Fishbein's theory of reasoned action (TRA)(1980). In *Information seeking behavior and technology adoption: Theories and trends* (pp. 188-204). IGI Global.
- Akkiraju, R., D. Bhattacharjya, and S. Gupta. 2012. "Towards Effective Business Process Availability Management." *Journal of Service Science Research* 4 (2): 319–351. doi: 10.1007/s12927-012-0013-2 [\[Crossref\]](#), [\[Google Scholar\]](#)
- Alalwan, A.A., Baabdullah, A.M., Rana, N.P., Tamilmani, K. and Dwivedi, Y.K., 2018. Examining adoption of mobile internet in Saudi Arabia: Extending TAM with perceived enjoyment, innovativeness and trust. *Technology in Society*, 55, pp.100-110.
- Antony, J., Krishan, N., Cullen, D. and Kumar, M., 2012. Lean Six Sigma for higher education institutions (HEIs) Challenges, barriers, success factors,

tools/techniques. *International Journal of Productivity and Performance Management*, 61(8), pp.940-948.

Armenakis, A.A. and Harris, S.G., 2009. Reflections: Our journey in organizational change research and practice. *Journal of change management*, 9(2), pp.127-142.

Asnar, Y., and P. Giorgini. 2008, September. "Analyzing Business Continuity Through a Multi-Layers Model". In International Conference on Business Process Management, 212–227. Heidelberg: Springer. [\[Crossref\]](#), [\[Google Scholar\]](#)

Australian National Audit Office. 2000. *Business Continuity Management, Keeping the Wheels in Motion*. Canberra: Australian National Audit Office. [\[Google Scholar\]](#)

[Azungah, T.](#) (2018), "Qualitative research: deductive and inductive approaches to data analysis", *Qualitative Research Journal*, Vol. 18 No. 4, pp. 383-400. <https://doi.org/10.1108/QRJ-D-18-00035>

Bakowski, C. 2007. Business Continuity Plan Development. <http://www.continuitycentral.com/bcpd.htm>. [\[Google Scholar\]](#)

Balzer, W.K., Francis, D.E., Krehbiel, T.C. and Shea, N., (2016). A review and perspective on Lean in higher education. *Quality assurance in education*, 24(4), pp.442-462.

Balzer, W.K., Brodke, M.H. and Thomas Kizhakethalackal, E., (2015). Lean higher education: successes, challenges, and realizing potential. *International Journal of Quality & Reliability Management*, 32(9), pp.924-933.

Bhamra, R., S. Dani, and K. Burnard. 2011. "Resilience: The Concept, a Literature Review and Future Directions." *International Journal of Production Research* 49 (18): 5375–5393. doi: 10.1080/00207543.2011.563826 [\[Taylor & Francis Online\]](#), [\[Web of Science ®\]](#), [\[Google Scholar\]](#)

Bird, M.D., 2021. Kanter, Rosabeth Moss: A Kaleidoscopic Vision of Change. In *The Palgrave Handbook of Organizational Change Thinkers* (pp. 821-837). Cham: Springer International Publishing.

Bao, W., 2020. COVID-19 and online teaching in higher education: A case study of Peking University. *Human behavior and emerging technologies*, 2(2), pp.113-115.

Boehmer, W. 2010. "Performance, Survivability and Cost Aspects of Business Continuity Processes According to BS 25999." *The International Journal on Advances in Security* 2: 312–324. [\[Google Scholar\]](#)

Bozkurt, A., Karakaya, K., Turk, M., Karakaya, Ö. and Castellanos-Reyes, D., 2022. The impact of COVID-19 on education: A meta-narrative review. *TechTrends*, 66(5), pp.883-896.

Bozkurt, A. and Sharma, R.C., 2020. Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian journal of distance education*, 15(1), pp.i-vi.

Brown, M., Costello, E., Donlon, E., & Giolla-Mhichíl, M. N. (2021). What makes a successful online learner? A systematic review of factors associated with online learning success. *International Review of Research in Open and Distributed Learning*, 22(1), 1-18.

Bruneau, M., S. E. Chang, R. T. Eguchi, G. C. Lee, T. D. O'Rourke, A. M. Reinhorn, and D. von Winterfeldt. 2003. "A Framework to Quantitatively Assess and Enhance the Seismic Resilience of Communities." *Earthquake Spectra* 19 (4): 733–752. doi: 10.1193/1.1623497 [\[Crossref\]](#), [\[Web of Science ®\]](#), [\[Google Scholar\]](#)

Bryman, A. (2017) Quantitative and qualitative research: further reflections on their integration. In *Mixing methods: Qualitative and quantitative research* (pp. 57-78). Routledge

Bryan Rodgers, Jiju Anthony & Elizabeth A. Cudney. (2022) A critical evaluation of organizational readiness for continuous improvement within a UK public utility company. *Public Money & Management* 42:8, pages 584-592.

Bryson, K.-M. N., H. Millar, A. Joseph, and A. Mobolurin. 2002. "Using Formal MS/OR Modeling to Support Disaster Recovery Planning." *European Journal of Operational Research* 141 (3): 679–688. doi: 10.1016/S0377-2217(01)00275-2 [[Crossref](#)], [[Web of Science](#)®], [[Google Scholar](#)]

Burke , W. and Litwin , G. 1992 . A causal model of organizational performance and change . *Journal of Management* , 18 : 523 – 545 . ([doi:10.1177/014920639201800306](https://doi.org/10.1177/014920639201800306)[\(open in a new window\)](#))

Burnes, B., 2020. The origins of Lewin's three-step model of change. *The Journal of Applied Behavioral Science*, 56(1), pp.32-59.

Burnes, B. and Bargal, D., 2017. Kurt Lewin: 70 years on. *Journal of Change Management*, 17(2), pp.91-100.

Caldwell, S. D. (2013) 'Are Change Readiness Strategies Overrated? A Commentary on Boundary Conditions', *Journal of Change Management*, 13(1), pp. 19–35. doi: 10.1080/14697017.2013.768428.

Cameron, E. and Green, M., 2019. *Making sense of change management: A complete guide to the models, tools and techniques of organizational change*. Kogan Page Publishers.

Casani Fernández de Navarrete, F., & Rodríguez Pomedá, J. (2015). Cambios y tendencias en la educación superior: los retos para la universidad. *Encuentros Multidisciplinares*, 17(49), 1–10.

Cathrine Edelhard Tømte, Trine Fosslund, Per Olaf Aamodt & Lise Degn (2019) Digitalisation in higher education: mapping institutional approaches for teaching and learning, *Quality in Higher Education*, 25:1, 98-114, DOI: 10.1080/13538322.2019.1603611

Cerullo, V., and M. J. Cerullo. 2004. "Business Continuity Planning: A Comprehensive Approach." *Information Systems Management* 21 (3): 70–78. doi: 10.1201/1078/44432.21.3.20040601/82480.11 [[Taylor & Francis Online](#)], [[Web of Science](#)®], [[Google Scholar](#)]

Chapman, C. L. 2017. *The Influence of Leadership on Business Continuity Planning: A Qualitative Phenomenological Study*. Doctoral dissertation, University of Phoenix, Phoenix. [[Google Scholar](#)]

Chen, L., 2024, August. Construction of Information Evaluation System of College Education Management. In *2024 5th International Conference on Education, Knowledge and Information Management (ICEKIM 2024)* (pp. 756-762). Atlantis Press.

Conklin, J. (2021). *Balancing Acts*. In *Balancing Acts*. University of Toronto Press.

Council, F. F. I. E. March 2008. Business Continuity Planning II. IT Examination Handbook. FFIEC. [[Google Scholar](#)]

Creswell, J.W. (2017) *Research Design: Qualitative. Quantitative, and mixed methods*

- Creswell, J. W., and Creswell, J. D. (2017). *Research design qualitative quantitative and mixed methods approaches*. Sage.
- Cummings, S., Bridgman, T. and Brown, K.G., 2016. Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. *Human relations*, 69(1), pp.33-60.
- Darmawan, A.H. and Azizah, S., 2020, January. Resistance to change: Causes and strategies as an organizational challenge. In *5th ASEAN conference on psychology, counselling, and humanities (ACPCH 2019)* (pp. 49-53). Atlantis Press.
- Davis, F.D., 1989. Technology acceptance model: TAM. *Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption*, 205(219), p.5.
- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," *Manage. Sci.*, vol. 35, no. 8, pp. 982–1003, 1989.
- Dwivedi, Y.K., Rana, N.P., Jeyaraj, A., Clement, M. and Williams, M.D., 2019. Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information systems frontiers*, 21, pp.719-734.
- Edwards, R. and Holland, J. (2013) *What is Qualitative Interviewing?*, London, GB, Bloomsbury Academic.
- Etareri, L., 2022. An analysis framework of change management. *Medicon Engineering Themes*, 3(1), pp.30-38.
- Fry, R., 2021. Beckhard, Richard: The Formulator of Organizational Change. *The Palgrave Handbook of Organizational Change Thinkers*, pp.147-161.
- Fullan, M. and Scott, G., 2009. *Turnaround leadership for higher education*. John Wiley & Sons.
- Georg Krücken (2014) Higher education reforms and unintended consequences: a research agenda, *Studies in Higher Education*, 39:8, 1439-1450, DOI: 10.1080/03075079.2014.949539
- Han, J.H. and Sa, H.J., 2022. Acceptance of and satisfaction with online educational classes through the technology acceptance model (TAM): The COVID-19 situation in Korea. *Asia Pacific Education Review*, 23(3), pp.403-415.
- Helms, R., S. Van Oorschot, J. Herweijer, and M. Plas. 2006. "An Integral IT Continuity Framework for Undisrupted Business Operations." Paper presented at the First International Conference on the Availability, Reliability and Security, 2006, ARES 2006. [\[Google Scholar\]](#)
- Herbane, B., D. Elliott, and E. M. Swartz. 2004. "Business Continuity Management: Time for a Strategic Role?" *Long Range Planning* 37 (5): 435–457.
doi: 10.1016/j.lrp.2004.07.011 [\[Crossref\]](#), [\[Web of Science ®\]](#), [\[Google Scholar\]](#)
- Herold, D. M., Fedor, D. B. and Caldwell, S. D. 2007. Beyond change management: A multi-level investigation of contextual and personal influences on employees' commitment to change. *Journal of Applied Psychology*, 92 : 942 – 951 . ([doi:10.1037/0021-9010.92.4.942\(open in a new window\)](#))
- Herscovitch, L. and Meyer, J.P., 2002. Commitment to organizational change: extension of a three-component model. *Journal of applied psychology*, 87(3), p.474.

- Hodges, T.S., Kerch, C. and Fowler, M., 2020. Teacher education in the time of COVID-19: creating digital networks as university-school-family partnerships. *Middle Grades Review*, 6(2), p.n2.
- Holden, R.J. and Karsh, B.T., 2010. The technology acceptance model: its past and its future in health care. *Journal of biomedical informatics*, 43(1), pp.159-172.
- Hürlimann, C. and Hürlimann, C., 2019. Research Philosophy and Ethics. Valuation of Renewable Energy Investments: Practices among German and Swiss Investment Professionals, pp.111-126.
- Hussain, S.T., Lei, S., Akram, T., Haider, M.J., Hussain, S.H. and Ali, M., 2018. Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. *Journal of innovation & knowledge*, 3(3), pp.123-127.
- Idogawa, J., Bizarrias, F.S. and Câmara, R., 2023. Critical success factors for change management in business process management. *Business Process Management Journal*, 29(7), pp.2009-2033.
- Isaac, O., Abdullah, Z., Ramayah, T., Mutahar, A.M. and Alrajawy, I., 2018. Integrating user satisfaction and performance impact with technology acceptance model (TAM) to examine the internet usage within organizations in Yemen. *Asian Journal of Information Technology*, 17(1), pp.60-78.
- ISO, B. 2012. 22301: 2012. *Societal Security. Business Continuity Management Systems. Requirements*. British Standards Institute, London. [\[Google Scholar\]](#)
- Jaffe, R.C., Bergin, C.R., Loo, L.K., Singh, S., Uthlaut, B., Glod, S.A., Fondhan, E., McManamon, A., Wallach, S.L., Hamad, K. and Walsh, K., 2019. Reactive, holistic, proactive: practical applications of the AAIM learning and working environment conceptual model. *The American journal of medicine*, 132(8), pp.995-1000.
- Jango, J., 2024. Leadership and management of change: introduction to navigating organisational change. *EuroMed Journal of Management*, 6(1), pp.57-71.
- Jacques, S., Ouahabi, A. and Kanetaki, Z., 2023. Post-COVID-19 education for a sustainable future: Challenges, emerging technologies and trends. *Sustainability*, 15(8), p.6487.
- Keller, S. and Price, C. 2011. Organizational health: The ultimate competitive advantage. *McKinsey Quarterly*, June, : 1 – 13.
- Kezar, A. and Eckel, P.D., 2002. The effect of institutional culture on change strategies in higher education: Universal principles or culturally responsive concepts?. *The journal of higher education*, 73(4), pp.435-460.
- Khamdamov, U., Abdullayev, A., Elov, J. and Sultanov, D., 2020. Conceptual model of the education management information system for higher education institutions. *International Journal of Advanced Trends in Computer Science and Engineering*, 9(5).
- Kildow, B. A. 2011. *A Supply Chain Management Guide to Business Continuity*. AMACOM Div American Mgmt Assn. <https://www.amazon.com/Supply-Chain-Management-Business-Continuity/dp/0814416454>. [\[Google Scholar\]](#)
- Katella, K. 2021. Yale Medicine, Our pandemic year – A Covid-19 timeline. <https://www.yalemedicine.org/news/covid-timeline> Accessed 4th January 2025

- Leana, C.R. and Barry, B., 2000. Stability and change as simultaneous experiences in organizational life. *Academy of management review*, 25(4), pp.753-759.
- Levy, J., P. Yu, and R. Prizzia. 2016. Economic Disruptions, Business Continuity Planning and Disaster Forensic Analysis: The Hawaii Business Recovery Center (HIBRC) Project, *Disaster Forensics*, 315–334. Springer. [\[Crossref\]](#), [\[Google Scholar\]](#)
- Liu, I.F., Chen, M.C., Sun, Y.S., Wible, D. and Kuo, C.H., 2010. Extending the TAM model to explore the factors that affect intention to use an online learning community. *Computers & education*, 54(2), pp.600-610.
- Martins, J., Branco, F., Gonçalves, R., Au-Yong-Oliveira, M., Oliveira, T., Naranjo-Zolotov, M. and Cruz-Jesus, F., 2019. Assessing the success behind the use of education management information systems in higher education. *Telematics and Informatics*, 38, pp.182-193.
- McCarthy, D., and K. Gordon. 2016. “SEC Issues Guidance on Business Continuity Planning for Registered Investment Companies.” *Journal of Investment Compliance* 17 (4): 71–74. doi: 10.1108/JOIC-09-2016-0043 [\[Crossref\]](#), [\[Google Scholar\]](#)
- Meaney , M. and Pung , C. 2008 . McKinsey global results: Creating organizational transformations. *The McKinsey Quarterly*, August , : 1 – 7 .
- Muchran, M. and Ahmar, A.S., 2019. Application of TAM model to the use of information technology. *arXiv preprint arXiv:1901.11358*.
- Mukherjee, S.P., 2019. *A guide to research methodology: An overview of research problems, tasks, and methods*. CRC Press.
- Nadler, D.A., 2024. The effective management of organizational change. In *Revitalizing Manufacturing* (pp. 185-200). CRC Press.
- Natasia, S.R., Wiranti, Y.T. and Parastika, A., 2022. Acceptance analysis of NUADU as e-learning platform using the Technology Acceptance Model (TAM) approach. *Procedia Computer Science*, 197, pp.512-520.
- Newman, M. and Gough, D., 2020. Systematic reviews in educational research: Methodology, perspectives, and application. *Systematic reviews in educational research: Methodology, perspectives and application*, pp.3-22.
- Nickerson, C., 2022. Interpretivism paradigm & research philosophy. *Simply Sociology*, 5.
- Niraula, S.R., 2019. A review of research process, data collection and analysis. *Insights in Biology and Medicine*, 3(1), pp.001-006.
- Oreg, S. and Berson, Y., 2019. Leaders' impact on organizational change: Bridging theoretical and methodological chasms. *Academy of Management Annals*, 13(1), pp.272-307.
- Purnamasari, V. and Advensia, A., 2014. Factor influencing of usage accounting game: Study of learning by game and theory acceptance model. *International Journal of Business, Economics and Law*, 5(1), pp.18-27.
- Salloum, S.A., Alhamad, A.Q.M., Al-Emran, M., Monem, A.A. and Shaalan, K., 2019. Exploring students' acceptance of e-learning through the development of a comprehensive technology acceptance model. *IEEE access*, 7, pp.128445-128462.

Salmon, G. (2020). May the Fourth Be with You: Creating Education 4.0. *Journal of Learning for Development*, 7(3), 271–278.

Shao, C., Nah, S., Makady, H. and McNealy, J., 2025. Understanding user attitudes towards AI-enabled technologies: An integrated model of Self-Efficacy, TAM, and AI Ethics. *International Journal of Human–Computer Interaction*, 41(5), pp.3053-3065.

Sunder M, V. and Mahalingam, S., 2018. An empirical investigation of implementing lean six sigma in higher education institutions. *International Journal of Quality & Reliability Management*, 35(10), pp.2157-2180.

Sutcliffe, K.M. and Weick, K.E., 2019. Mindful organising and resilient health care. In *Resilient health care* (pp. 145-156). CRC Press.

Sweeney, Y.T. and Whitaker, C., 1994, December. Successful change: renaissance without revolution. In *Seminars for nurse managers* (Vol. 2, No. 4, pp. 196-202).

Venkatesh, V. and Davis, F.D., 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), pp.186-204.

Venkatesh, V., 2022. Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of operations research*, 308(1), pp.641-652.

Venkatesh, V. and Bala, H., 2008. Technology acceptance model 3 and a research agenda on interventions. *Decision sciences*, 39(2), pp.273-315.

Walk, M. (2022). Leaders as change executors: the impact of leader attitudes to change and change-specific support on followers. *European Management Journal*.

Weiner, B.J., 2020. A theory of organizational readiness for change. In *Handbook on implementation science* (pp. 215-232). Edward Elgar Publishing.

Wen, Y., 2024, November. Analysis of Integrated Strategy of Information flow of Education and Teaching Management in independent Colleges and Universities. In *2024 5th International Conference on Modern Education and Information Management (ICMEIM 2024)* (pp. 240-249). Atlantis Press.

Yazdani, B. and Barton, H., 2013, May. Lean in knowledge intensive firms: a case study of lean at Nottingham Business School. In *24th Annual Poms 2013 Conference, Denver, Colorado* (pp. 3-6).

Yazdani, B., 2006, October. Lean product development: Jaguar & Land Rover. In *IET 2nd International Technology and Innovation Conference* (pp. 113-132). Stevenage UK: IET.

W. Zhang, Y. Jiang and W. Zhang, "Capabilities for Collaborative Innovation of Technological Alliance: A Knowledge-Based View," in *IEEE Transactions on Engineering Management*, vol. 68, no. 6, pp. 1734-1744, Dec. 2021, doi: 10.1109/TEM.2019.2936678.

Chapter 9: Appendices

Appendix 1

Data collection 2 – Survey questionnaire

Question 1

Has the pandemic affected the collaborative partnership in any way – positive or negative?

Question 2

Going forward will the partnership be impacted as a result of more online adaptation?

Question 3

What are the challenges now facing the partnership?

Question 4

What measures have been put in place to help cope with the pandemic?

Question 5

How has this collaboration enhanced your organisation's competence & efficiency, etc.?

Question 6

Why did you choose a HE partnership as part of your business model?

Follow up questions:

Are you aware of any crisis management plan in the event of a situation that requires immediate change or action? If so, can you briefly explain the detail.

During the course of the pandemic many creative and innovative practices were introduced and utilised. Looking ahead, are you aware of this being an ongoing and continued endeavour and if so, are you able to briefly explain any of them?

Are you aware of any contingency plans in the event of a crisis that prevents or limits the delivery of programmes at your institution?

During the course of the pandemic many creative and innovative practices were introduced by institutions. Going forward, is your institution planning to continue this development and if so, in what ways?

Appendix 2

Data collection 3 - Participant Information Sheet

What is the research about?

This research focuses specifically on trying to establish whether or not there is a basis for the adaptation of Lean principles and practices into Higher Education and in particular that of collaborative partnerships.

The research aims to explore this idea in the context of HE partnerships. It therefore includes the analysis of issues and discussions relating to a Lean approach within a HE collaborative context, however, the purpose of the research is not to gather ideas for a Lean approach but more to establish if the philosophy or practices are familiar and whether or not a consensus can be agreed upon. The terms 'Lean' and 'Agile' are often linked and also synonymous with change or improvement within a process driven environment.

Aims of the research

The aim of this research is to establish if there is basis for the adaptation of a lean approach into Higher Education and in particular, that of collaborative partnerships and the exchange of information. Furthermore, the research will seek to explore the preparedness and resilience of institutions to rapid change due to unplanned and immediate disruptive events.

What will your participation involve?

Participation in this research will entail about thirty to forty-five minutes of your time to discuss your views and opinions about the adaptation of lean in an educational collaboration. By agreeing to this interview process, you will enable me to garner relevant information about the topic and also provide deeper insights into how a lean philosophy is perceived in HE.

Interview location

The interview will be conducted using webex and recorded to enable accurate transcripts to be produced. It is very important for the research that you feel at ease and comfortable when sharing your perceptions and opinions about the topic.

Outcome of the interview data

One important aspect of this research is confidentiality and anonymity. To ensure this, interviews which will be recorded through the use of webex and will only be handled by Myself and will be reviewed only in QAHE or my residence while maintaining strict adherence to data protection principles. You will be given the webex code that will be used on the day of the interview.

Likewise, electronic copies of interview transcripts will be kept in a password protected file. Any electronic data pertaining to transcripts, notes and findings resulting from the interview process will be stored securely on my QAHE computer system and only accessed via my password.

Your rights as a participant

Your participation in this interview is entirely voluntary. You may refuse to answer any question. You may ask to terminate this interview at any moment and for any information you

have provided to be deleted/destroyed immediately. After the interview you could ask for your information to be removed from my research up until I begin the analysis stage of my research. This process will take place approximately one month after the interview. I will keep your data until I complete my PhD. After that all original data from the interview will be safely destroyed. .

Contact for further information

If you are willing and able to take part in this research then please complete the attached consent form and return to my QAHE email. On the other hand, you can contact me via email or telephone through the details provided. Upon receipt of your confirmation, I will contact you to agree the interview date and location.

For further information regarding this research, please do not hesitate to contact me on the contact details provided below.

Martin Gilbert
QA Higher Education
5th Floor
Centre City
5-7 Hill Street
Birmingham
B5 4UA

Tel: 07721 261508
Email: Martin.gilbert@qa.com

Appendix 3

Participant Consent Form

Name:

Date:

As an informed participant of this research, I understand:

- The purpose of this research and I am aware of what my participation involves
- That my participation is entirely voluntary and I have the right to withdraw my consent at any point during the interview
- That I have the right to refuse answering any questions
- That all information gathered during this process will be kept securely and confidentially
- That I have the right to request the transcript from this interview and have the right to request the withdrawal of any information that I have given before the data is analysed approximately three months after the interview.

I have read and understood the above, and give consent to participate:

Signed: _____ **[Respondent]**

I have explained the above and answered all questions asked by the participant:

Signed: _____ **[Researcher]**

Appendix 4

Data collection 3 - Semi-structured interviews – Participant information sheet and questions

Research Questions

The focus of this research is to establish if there is basis for the adaptation of a lean approach into Higher Education and in particular, that of collaborative partnerships and the exchange of information. As such the research will look to address the following questions:

- What are the similarities and differences in views of stakeholders (experts) that identify a need for improvement in the HE partnership process?
- Is there a consensus that would confirm that a requirement for improvement exists?
- Can a lean approach be adapted to the process of information flow in a collaborative HE partnership?
- How can a lean approach be adapted?
- What would be the benefits of adapting such principles and practices to the HE sector?
- Is the sector ready for such a change?

Interview Schedule

This research focuses specifically on trying to establish whether or not there is a basis for the adaptation of Lean principles and practices into Higher Education and in particular that of collaborative partnerships.

This interview aims to explore this idea in the context of HE partnerships. It therefore includes the analysis of issues and discussions relating to a Lean approach within a HE collaborative context, however, the purpose of the interview is not to gather ideas for a Lean approach but more to establish if the philosophy or practices are familiar and whether or not a consensus can be agreed upon. The terms 'Lean' and 'Agile' are often linked and also synonymous with change or improvement within a process driven environment.

Guide for interviews

Question 1: (Individual understanding)

First of all, before we begin our conversation, I would like to establish your understanding of the terms 'Lean' and 'Agile' in the context of change or improvement.

- Can you please explain your understanding of the terms Lean and Agile?

Question 2: (Individual views on the need for change or improvement)

Focussing more now on change or improvement itself, would you say that you are an advocate of change or improvement?

What do you think about the following?

- Change or improvement should be a common focus
- Change is necessary in the current climate
- The need for change or improvement can always be identified

Question 3: (Attitudes to process change or improvement)

Now I would like to shift your attention to the role you play in collaborative partnerships and the processes that are in place to support this.

- Would you say that you are familiar with the processes that enable the collaborative partnership to operate?
- As a collaborative partnership there are many processes that involve the exchange of information, would you agree with this?
- Would you say that they could benefit from being improved if such a requirement was established?
- Do you have any immediate thoughts on possible improvements?

Question 4: (Lean approach to process improvement)

Having now discussed the term Lean and its relevance, I would like to link this with process improvement. As we have spoken about previously, lean within process improvement is typically synonymous with manufacturing and more specifically, car manufacturing whereby elements of waste are mitigated or removed from the process.

- With this in mind do you think that a lean approach could be adopted in the processes that are used for your collaborative partnership?
- If so, can you think of any cases or instances that may warrant a particular lean approach?
- Do you think that such an approach to HE collaborative partnerships is beneficial?
- Do you think that the HE sector is ready for such a change?

Question 5: (Crisis Management and Business Continuity Planning)

At this point, I would like to switch the focus of our conversation slightly and start to look at the Agile concept and its link to Crisis Management and Business Continuity Planning (BCP).

Since Covid-19 first took its hold in early 2020 organisations and institutions have had to adapt and overcome the challenges that the pandemic has presented. In light of this, educational institutions in particular have had to develop alternative delivery methods in a very short period of time thus adopting an agile approach.

- Within your institution are you aware or familiar with any form of BCP or Crisis Management to deal with such immediate events or challenges? If so, could you please explain what they entail?
- Do you think that educational institutions are fully prepared for disruptive events that require immediate and radical change?

- Were you part of the change that was needed during the pandemic and if so how did this impact you?
- Would you say that the events throughout the initial period of the pandemic helped realise opportunities for delivery development?

Question 6: (Current and future delivery)

In conclusion, I would like to ask you about the current and future outlook of HE in terms of providing a creative and innovative delivery of programmes.

- Can you describe the current creative and innovative delivery methods that your institution has adopted and how you feel they have developed positively through the last 2 years?
- Finally, could you explain how you see the future and further development of delivery technologies?