

**Investigating the Influence of the Individual Empowerment
and Cultural Intelligence on the Emergence of Innovation in
the Public Sector**

بحث تأثير التمكين الفردي والذكاء الثقافي على ظهور الابتكار في القطاع العام

by

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ABSTRACT

Based on the necessity to transform public sector higher education service providers to become more innovative and responsive to the market's dynamic needs, and in response to the rapid changes and challenges caused by the impact of the 4th industrial revolution and the globally connected economies that require dynamic, flexible, and synchronised systems to accommodate their continuous evolutions. This research investigates the influence of employee empowerment and Cultural Intelligence (CQ) on the emergence of innovation in the public sector higher education context on making this sector the right environment for innovation to emerge. Also, this research introduces and comprehensibly interlinks the defined innovation agents in a way to influence the emergence of innovation outcomes in the public sector setting. The construction of the identified innovation agents has eventually produced a coherent Innovation Ecosystem (InE) to empower public sector service providers in the way to foster innovation and meet the required and desired outcomes.

Following a quantitative research method, a questionnaire was designed by the researcher consisting of 72 questions, including eight demographic questions. The data was collected by surveying 217 employees, working in several higher education providers in the public sector within the United Arab Emirates (UAE), who provided 162 completed responses. In addition, several statistical techniques were utilised in order to analyse the relationships between the defined variables in this research conceptual framework. The results indicated that the direct effect of empowered employees with high CQ positively contributed to increasing the emergence of

innovation outcomes in the public sector higher education providers. Furthermore, CQ influence is proven to perform a substantial role in the emergence of innovation in the public sector as an innovation booster when acting as a mediator, and a depreciator when acting as a moderator. Such results show the significant role of cultural differences and their impact on the emergence of innovation in the public sector higher education service providers. On the other hand, by constructing Emergence of Innovation Drivers (EID) and linking them with the Emergence of Innovation Outcomes (EIO) via CQ channels; the presumed InE was created and customised to fit the setting of the public sector higher education providers. Hence, this research confirms that employee empowerment influenced by cultural intelligence would increase the emergence of innovation in the public sector higher education service providers within the defined InE.

ABSTRACT IN ARABIC

بناء على ضرورات تحويل مزودي خدمات التعليم العالي من القطاع العام ليصبحوا أكثر ابتكاراً واستجابة لإحتياجات السوق الديناميكية ، وبهدف تحسين استجابة هذا القطاع للتغيرات والتحديات السريعة الناجمة عن تأثير الثورة الصناعية الرابعة والاقتصادات المرتبطة عالمياً حيث يتطلب هذا الأمر إيجاد أنظمة ديناميكية متزامنة ومرنة تؤهل هذه المؤسسات من استيعاب هذه التطورات والتغيرات المستمرة ، يحقق هذا البحث في تأثير تمكين الموظف والذكاء الثقافي (CQ) على ظهور الابتكار في سياق التعليم العالي من القطاع العام بهدف جعل هذا القطاع بيئة ملائمة لظهور الابتكار ، كما يتمثل التركيز في هذا البحث على ربط عوامل الابتكار التي تم تحديدها في هذا البحث بطريقة شاملة لتكوين بيئة داعمة لظهور نتائج الابتكار في بيئة القطاع العام ، وبناء على ذلك تم في هذا البحث بناء نظام ابتكار إيكولوجياً متماسكاً (InE) ليُمكّن مقدمي خدمات التعليم العالي في القطاع العام من الابتكار وتحقيق النتائج المطلوبة.

تتبع هذه الدراسة مسار البحث الكمي حيث صمم الباحث استبياناً يتكون من 72 سؤالاً من بينها ثمانية أسئلة سكانية بهدف جمع البيانات ذات الصلة ، وعليه تم إجراء مسح على 217 موظفاً يعملون في العديد من مؤسسات التعليم العالي من القطاع العام داخل دولة الإمارات العربية المتحدة (UAE) حيث تم قبول 162 استجابة كاملة ، بالإضافة إلى ذلك تم استخدام العديد من التقنيات الإحصائية لتحليل العلاقات بين المتغيرات المحددة في الإطار المفاهيمي لهذا البحث ، وعليه أظهرت النتائج التي أفرزتها هذه الدراسة أن التأثير المباشر للموظفين المُمكنين من ذوي الكفاءة والذكاء الثقافي العالي CQ ساهم بشكل إيجابي في زيادة ظهور نتائج الابتكار لمقدمي خدمات التعليم العالي من القطاع العام ، كما ثبت أن تأثير الذكاء الثقافي CQ يؤدي دوراً كبيراً في ظهور الابتكار في القطاع العام كداعم للابتكار عندما يعمل كوسيط أصيل بين إمكانات الابتكار ومخرجاته ، كما يعمل الذكاء الثقافي كمثبط للابتكار عندما يُؤثر كعامل خارجي على إمكانات الابتكار ومخرجاته ، تُظهر هذه النتائج الدور الهام للإختلافات الثقافية ومدى تأثيرها على ظهور الابتكار لمقدمي خدمات التعليم العالي من القطاع العام ، كما نتج أيضاً عن هذا البحث إنشاء " نظام إيكولوجي للابتكار " والذي تم تصميمه خصيصاً للقطاع العام من خلال ربط إمكانات الابتكار مع مخرجاته عبر قنوات الذكاء الثقافي لتلائم بيئة عمل مزودي التعليم العالي من القطاع العام ، وبالتالي خلصت هذه الدراسة على تأكيد أن تمكين الموظف المتميز

بالذكاء الثقافي سيزيد من ظهور الابتكار في بيئة عمل مقدمي خدمات التعليم العالي من القطاع العام ضمن نظام الابتكار
الإيكولوجي الذي تم بناءه في هذا البحث.

DEDICATION

To the decision-makers in the public sector higher education providers who are creating and implementing strategies to reform this sector towards making it the more responsive to the government, market, community, and the fourth industrial revolution needs and transformations

and to those dedicated professionals from several levels who are thriving to make higher education the right environment for innovation to emerge

and those dedicated professionals who are working on integrating industry needs into the offered universities programmes aiming to graduate work-ready students who meet the current and emerging careers.

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1. CHAPTER ONE: INTRODUCTION

1.1. Introduction

Chapter one provides a general overview of the research context, background, problem statement and questions that direct the whole research in the selected field on innovation in the public sector higher education service providers. In addition, this chapter presents research aims and objectives, hypotheses, and concludes by introducing the research significance and novelty.

1.2. Research Context

Public sector service providers, in general, are facing challenges to create a flexible management system to address and deal with the societal and industrial dynamic needs and expectations (De Vries et al. 2016). These challenges raised from the inherited business model that was built on the New Public Management (NPM) rigid structures and tangible measurements that undertake explicit delivery framework (Potts 2009) and (Pollitt and Bouckaert 2011). Also, the external environment rapid transformations caused by the fourth industrial revolution (Schäfer 2018) in addition to the globally connected economies (Zhou and Su 2010) and (Chandan 2015) along with the competition with the private sector (Mansour 2017) are creating a critical level of uncertainty on what innovation strategy should be adapted to thrive and eventually provide the required outcomes (Foroudi et al. 2016). Furthermore, the internal and external cultural perspective is playing a significant role in innovation adoption and implementation as most of the communities became multicultural with several needs (Thomas et al. 2015) and (Awan and Kraslawski 2017).

Based on that, there is a need to reform the public sector followed NPM system through innovation adoption (Pollitt and Bouckaert 2011) and (Janowski 2015).

There are several models to manage the public sector higher education service providers where some countries are providing higher education with a high degree of autonomy (Kogan and Hanney 2000) and others are falling under the NPM system (Ferlie, Musselin and Andresani 2008) like the public sector higher education service providers in the UAE (Mansour 2017). In this context, NPM model has implemented a reform on the public sector as a whole that led to fundamentally reframing the higher education to be managed as a knowledge corporation with strategic planning process leading to define targets, incentive structure, performance assessment system, and expenses policy like other publicly funded services (Peters 2013). Such rigid NPM system participated in graduating students from public sector higher education service providers with skills that are not in line with the market needs while there is a potential to have several unfilled jobs in the near future as a result of this system constrains (Johnson and Sengupta 2009). Therefore, there is a need to transform the public sector to become the right environment for innovation to emerge (Pollitt and Bouckaert 2011).

Public sector innovation definition varies and could be defined as the implementation of a new creative idea that perceives novelty at the individual (Meijer, 2014), group (West 1990), organisation (Borins 2000), and community (Rogers 2003) to enhance or develop new governance, process, product, or service (Damanpour, 1991) and (Bhatti et al. 2011) towards achieving defined outcomes (De Vries et al. 2016). In the same context, innovation in higher education refers to introduction of new idea, method, performance in addition to a “new way of doing things, or a

change that improves administrative or scholarly performance, or a transformational experience based on a new way of thinking” as emphasised by White and Glickman (2007). Hence, the innovation definition from a concept point of view for the public sector in general and higher education service providers, in particular, is focusing on *new idea adoption at the individual, group, organisation, and community levels toward enhancing, change, or develop organisational administrative, services, product or process towards achieving required and desired outcomes.*

Innovation generation in the public sector is following many types and approaches. According to Arundel, Bloch and Ferguson (2016), there are two distinct types of innovation in the public sector came from its traditional governance model that still influences until today; the first approach is “‘top down’ innovation, driven by politicians and senior management”, and the second one is the “‘bottom up’ innovation which encourages the involvement of front-line staff and middle management in innovation activities”. Here it is worth to mention that bottom-up (employee-driven innovation) and top-down (policymakers) innovation process in the public organisations could be adjusted through employees personal involvement especially middle management, communication channels, and networks & mediating tools in the way to integrate related innovation activities, as concluded by Saari, Lehtonen and Toivonen (2015). However, “there is some empirical evidence that public sector organisations that encourage ‘bottom up’ innovation have better innovation outcomes than ‘top down’ organisations” as argued by Arundel, Casali and Hollanders (2015). This conclusion is considered as one of the motives in this research to adopt the bottom-up innovation approach to increase the emergence of innovation opportunities in the public sector higher education service providers. More details on innovation in the public sector are provided in chapter four from this research.

To support organisation to become more innovative; Employee Empowerment is considered as one of the crucial factors that support innovation adoption at individual and organisational levels (Uzambacak 2015). The individual psychological empowerment that includes “locus of control, self-esteem, information-sharing and rewarding” as stated by Spreitzer (1995), will lead to generate and adopt an innovation. Also, employee autonomy through organisational empowerment is considered as one of the significant individual antecedents that influence innovation adoption in the public sector (De Vries et al. 2016). Furthermore, innovation at a group level would support individuals to create innovative ideas in the way to transform them into enhanced or new processes and implementations (Aulawi et al. 2009). Finally, individual empowerment is increasing the individual proactive behaviour in dealing with social policies, change, and the political environment (Rappaport 1984) that fits in the public sector context. This behaviour of the empowered individual will add value when it comes to adopting innovation within a social context (Rogers 2003). Based on that, employee empowerment in the public sector could be defined *as to trust and motivate employees through increasing their autonomy, participating in decision-making, enhancing communication channels, facilitating innovation through teams, allocating resources, and rewarding that eventually lead to improving their performance to become more innovative.* Thus, employee empowerment at the individual, group, organisational, and community levels will influence the innovation generation and adoption within public organisations. More details on the employee empowerment and how this notion will support the emergence of innovation in the public sector are provided in chapter two of this research.

Nowadays, working environments are open and connected; which makes a successful collaborating and partnering in multicultural working environments depends on the individual ability to manage and excel in such environments (Awan and Kraslawski 2017). Cultural Intelligence (CQ) is defined as the ability of an individual to act and perform in cross-cultural settings, where a high CQ level would support those individuals who are working in a multicultural environment to excel through better performance (Ang et al. 2007). CQ training could be used by the organisations to enhance their employees cognitive, motivation, and behaviour to perform and manage cross-cultural situations (Rehg et al. 2012). On the other hand, the primary CQ outcomes are adjustment and adaptation, performance and effectiveness, and cross-cultural leadership that is grounding the right platform for individuals to gain better leadership approaches, adopt innovation, overcome job strains, supporting practices and adjustment, and having enhanced performance in typical and transformational situations (Ott and Michailova 2016). Hence, CQ is influencing the interactions and performance at the individual, group, organisation and community levels taking into consideration the fact that all organisations are part of the modern open and connected multicultural economies where the whole world is linked, and influencing each other. More details on CQ are provided in chapter three of this research.

Innovation ecosystem describes the number and the diverse nature of resources (material and human capital) that are conditionally functioning together as a unit for creating innovation within entities at desirable levels as stated by (Jackson 2011). Based on this definition, this research is bringing the notion of the emergence of innovation to the public sector higher education context along with employee empowerment and cultural intelligence to establish an Innovation Ecosystem (InE). The aim from constructing this InE is to support the emergence of innovation opportunities

in this sector to overcome its rigid management system and produce the required and desired outcomes that are aligned with the government, community and market needs and demands. This public sector InE was constructed through identifying the innovation Human Drivers (IHD): Employee Empowerment, Line Manager Support, Board of Innovation Provision in addition to the Innovation System Drivers (ISD): Organisation Behaviour, and Environment Readiness to support the emergence of innovation in the public sector higher education service providers at the individual, group, organisational, and community levels. The IHD and ISD were integrated to form the Emergence of Innovation Drivers (EID) as a macro level and been associate with the Emergence of Innovation Outcomes (EIO) with the influence of the CQ to channel these relationships between EID and EIO at both micro and macro levels. More information on the emergence of innovation outcomes and innovation ecosystem will be provided in chapters four and five from this research.

In summary, public sector higher education service providers are facing several internal and external challenges that made them slower to synchronise their services and outcomes with the government and market needs and demands. One of the internal challenges came from the rigid NPM metrics that are not in line with innovation adoption. As a result, there are qualified and unemployed graduates from higher education who possess skills that are not required by the market, and at the same time, there are many unfilled jobs that require skills and competencies based on the technology revolution along with the open and connected economies. Based on that, there is a need to change the public sector educational model to produce the required innovative services and products. These innovation outcomes should be in line with the needs of the community, industry, and technology revolution that result in graduating students who possess the right skill set for current and future jobs.

This conclusion emphasises on the fact that public sector higher education service providers should adopt innovation culture as an integral part of the organisation to support the emergence of innovation towards producing the required outcomes. In the same context, employees empowerment, along with resource allocation would support the innovation generation and implementation within this sector. Furthermore, by taking into consideration the multicultural aspects of the working environments; high CQ would support individuals and organisations to have better performance and understanding for their customers, community, and market needs. Therefore, employee empowerment with high CQ is forming the core of the Public Sector Innovation Ecosystem towards increasing the emergence of innovation outcomes in the public sector higher education services providers. Based on the above-mentioned challenges and conclusions, the research problem statement has evolved.

1.3. Research Problem Statement

The rapid globalisation and economic transformations (Chandan 2015) that are influenced by the fourth industrial revolution (Schäfer 2018) are challenging the rigid systems followed by public sector institutions, which made them slower to adopt new processes for enhancements and meet the new requirements towards competitiveness (Chittoo, Ramphul and Nowbutsing 2009). From the other side, the “higher education is currently confronted by global forces that necessitate innovative research, innovative pedagogies, and innovative organizational structures” as stressed by Tierney and Lanford (2016) to produce college-ready graduates as required by the industry. Furthermore, there is a potential to have millions of unfilled jobs in the near future because public

sector higher education capacity is constrained and focused on the skill set that is not required by industry (Johnson and Sengupta 2009). Finally, there is a reduction in the provision of funds to higher education (Goedegebuure and Schoen 2014) along with the growing demands from the government to increase the efficiency of the public sector higher education that is profoundly impacting and forcing changes at all levels and may compel to re-innovate the whole institutional structure (Powell, Gilleland and Pearson 2012).

In response to these challenges, Public Sector Service Providers need to adopt innovation culture to overcome the followed rigid systems (Pollitt and Bouckaert 2011) through reforming this old management system to meet the new requirements towards competitiveness (Chittoo, Ramphul and Nowbutsing 2009) and thrive in technology transformations (Bekkers and Janowski 2015). Also, they need to empower their employees to create an environment within the organisation for innovation development and implementation (Fernandez and Moldogaziev 2010). Furthermore, they need to become more competitive and meet the market and customers' needs (De Vries et al. 2016) through generating innovative solutions that keep the customers always satisfied (Bester, Stander and Van Zyl 2015). Moreover, as a lesson learned from the private sector, innovation should be supported by a new breed of leaders and managers who possess high cultural intelligence to function in a cross-cultural working environment (Ng et al. 2012), (Chen et al. 2014), and (Solomon and Steyn 2017). Finally, by adopting innovation, public sector higher education providers will be able to overcome the mentioned challenges starting from transforming the current systems toward creating breakthroughs, inventions, and solutions that result in immeasurable benefits to the society through improving life quality and enhancing global sustainability (Powell, Gilleland and Pearson 2012). This expectation comes alongside graduating

competitive and skilled students holding the market required credentials, in addition to becoming a recognised education hub by nurturing innovative researchers and developers (Knight 2011). Hence, employee empowerment with appropriate CQ level would support Public Sector transformation to overcome the internal and external challenges and becoming the right environment for innovation to emerge in the way to achieve the required and desired outcomes.

In summary, industry and social needs that are influenced by the fourth industrial revolution are forming a challenge for public sector higher education providers to develop their offered services and graduate students who meet the market needs and requirements. Also, the dynamic changes in the industry and market needs are forming another critical challenge for public sector higher education providers to timely and effectively respond and adapt these forced changes into the offered services. The higher education management within the public sector is still under the influence of the third industrial revolution that is based on the “production line” within “defined timeline”. Such classical and rigid management paradigms are preventing public sector higher education providers from synchronising their offered services and products to timely cope with the market rapid changes. The assumption in this research is that employee empowerment, along with high cultural intelligence, would transform the public sector organisations to the right environment for innovation to emerge. By having innovation ecosystem as a natural norm and culture within the public sector; higher education service providers will become more flexible and empowered in the way to meet industry and market needs and producing the required and desired innovative solutions and services.

Mainly, there are many challenges that are preventing public sector higher education service providers to become more responsive to the government and market demands. One of these challenges is the adopted NPM rigid metrics that are not providing the required flexibility to adopt innovation towards creating timely solutions. As a result, there are many graduates who are qualified and unemployed because they do not have the market required skills, while there are many unfilled jobs in addition to those emerging ones from the fourth industrial revolution. This research is aiming to create an innovation ecosystem to support public sector higher education service providers to become more innovative to achieve the required and desired outcomes. This innovation ecosystem was formed by bringing the innovation drivers to public sector higher education service providers' context and link them with the emergence of innovation outcomes via social intelligence channels. Such formation for innovation ecosystem is based on the bottom-up effect that is presumed to provide innovative solutions to overcome the rigid top-down effect of the followed NPM system that is hindering the innovation adoption within this sector to a certain extent. (Chapter 1, No 2)

On the other hand, the three central research notions (Employee Empowerment, Cultural Intelligence, and Emergence of innovation) were developed in the public sector context and connected under the defined innovation drivers and outcomes at the individual, group, organisational, and community levels. Such integration led to developing this research conceptual framework in the way to construct the presumed innovation ecosystem. The process of generating this framework started from general theories related to the targeted fields in innovation and empowerment that mainly came from the private sector. Then, the adopted three notions were mapped with the public sector context especially higher education providers to create an innovation

ecosystem for increasing the emergence of innovation outcomes. The defined innovation drivers and the emergence of innovation outcomes were interlinked as causal effect and antecedent causal effect between the factors. Finally, cultural intelligence was brought to this system to enhance the connections between innovation drivers and outcomes. It is presumed that this innovation ecosystem will form the right environment for the empowered employees as part of innovation drivers with high CQ to increase the emergence of innovation outcomes in the public sector higher education service providers.

Based on that, the research questions related to these challenges were developed to guide the research within public sector innovation, as shown in the next section.

1.4. Research Questions

This research is guided by the following research questions. These questions are also used as a general guide for driving the research conceptual framework and methodology to achieve the research main aim and objectives:

- 1- What are the innovation agents that together will create an innovation ecosystem that facilitates the emergence and adoption of innovation within the public sector higher education service providers?
- 2- How does Innovation Human Drivers (Employee Empowerment, Line Manager Support, Board of Innovation Provision) influence the Emergence of Innovation Outcomes in the public sector higher education service providers?

- 3- How does Innovation System Drivers (Organisation Behaviour, and Environment Readiness) influence the Emergence of Innovation Outcomes in the public sector higher education service providers?
- 4- How does the Emergence of Innovation Drivers influence the Emergence of Innovation Outcomes in the public sector higher education service providers?
- 5- How does cultural intelligence impact the Emergence of Innovation Drivers to influence the emergence of innovation outcomes in the public sector higher education service providers?

The research objectives have derived from the abovementioned question set in order to investigate the influence of employee empowerment and cultural intelligence on emergence of innovation in public higher education service providers.

1.5. Research Aims and Objectives

This research is investigating the influence of the individual empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers. The primary aim is to identify the public sector innovation (individual and system) drivers in the way to form an innovation ecosystem with the influenced of the cultural intelligence to increase the opportunities of the emergence of innovation within this sector. This InE is intended to support the public sector higher education service providers to overcome their rigid systems, become more responsive to market needs and technology transformations, and eventually graduate students who

possess the required skills and competencies for the current and future jobs in the way to overcome the challenges of unemployed graduates who does not have the required skills while there are many unfilled jobs that require skills that meet the demands of the fourth industrial revolution and global economies. The main research objectives are as follows:

1. To identify the notions of employee empowerment, cultural intelligence, and innovation in the public sector service providers' context and extract their measurements accordingly.
2. To identify the innovation drivers that create an ecosystem for facilitating the emergence of innovation within the public sector service providers.
3. To find the associations between the emergence of innovation drivers and the emergence of innovation outcomes with the influence of cultural intelligence within the public sector service providers.
4. To conduct a survey among public sector higher education providers and analyse the data via several statistical techniques.
5. To report the finding and confirm the research hypotheses.
6. To propose strategies that could be used to support the public sector higher education service providers to become more responsive to market needs and technology transformations.

Regarding the research problem statement, objectives, and questions; there are many presumed connections between the research three central notions (employee empowerment, cultural intelligence and emergence of innovation in the public sector). Also, there is a need to construct innovation drivers from human and system perspective in the way to interlink them with

the innovation outcomes in the public sector, which led to forming the research hypotheses as provided in the next section.

1.6. Research Hypotheses

This research is set to explore the correctness of the following hypotheses relating to innovation human drivers, innovation system drivers, and the emergence of innovation outcomes in the public sector service providers influenced by the cultural intelligence as follows:

H1: The Innovation Human Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Higher Education Service Providers.

H2: The Innovation System Drivers would associate with the Emergence of Innovation Outcomes in the Public Sector Higher Education Service Providers.

H3: Emergence of Innovation Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Higher Education Service Providers.

H4: Cultural Intelligence would influence the association between Emergence of Innovation Drivers and Emergence of Innovation Outcomes in the Public Sector Higher Education Service Providers.

By stating the research hypotheses, there is a level of novelty and newness that this research is presenting through bringing the notion of emergence of innovation to the public sector higher education and by employing the CQ influence as moderator and mediator at the individual, group, organisation, and community levels as will be presented in the next section.

1.7. Research Significance and Novelty

De Vries et al. (2016) stressed that innovation in the public sector requires more investigation in theoretical, multi-methods, cultural, and governance perspective. On the other hand, innovation in the private sector is well-developed as a research area of study where innovation generation and adoption as a norm at the organisational level is explained (Fagerberg et al. 2005). This research adds to the body of knowledge through providing an empirical study identifying public sector innovation individual drivers and system drivers with the aim of constructing an innovation ecosystem that supports public sector transformations. Also, this research is showing significance by bringing the notion of the emergence of innovation to the public sector higher education context in order to establish a ground theory for public sector innovation. Furthermore, another realised significance of this research related with introducing the notion of the Cultural Intelligence (CQ) within public sector context and investigating the effect of the CQ as a moderator and as a mediator on innovation human drivers, innovation system drivers, and the emergence of innovation outcomes in the public sector higher education context on individual, group, organisation, and environment levels. Finally, this research carefully adopts the employee empowerment from the private sector into the context of the public sector and examines it through the interactions with Cultural Intelligence and the emergence of innovation outcomes.

In summary, this research demonstrates a level of uniqueness in public sector innovation via developing and associating the constructs of (Empowerment, Emergence of Innovation, and Cultural Intelligence) in public sector higher education context. Also, this research significantly contributes to the body of knowledge emerging theoretical understanding of innovation in the

public sector higher education through its thorough and constructive literature review, structure and conceptual framework. Furthermore, this research is establishing a ground theory for the emergence of innovation in the public sector to creating an innovation ecosystem within the public sector higher education for innovation to emerge. Moreover, this research proposes an innovation ecosystem with relevant conditions that have been customised to meet public sector needs and requirements towards becoming the right environment for innovation to emerge. Finally, this research is serving researchers and practitioners to bridging the existing gap in the body of knowledge related to innovation in the public sector, in addition to offering a promising ground to further the study in its unique approach.

On the other hand, there are limitations to this research due to the level of newness for the developed conceptual framework in addition to selecting public sector higher education service providers from the UAE to conduct this research. For example, selecting one country like UAE that is a multicultural working environment to conduct this research is not providing a panoramic understanding to the influence of this research concept in those countries with different settings that are not in line with the UAE working environment in addition to the adopted management system. Also, even though there are similarities between public sector service providers including higher education who are following the NPM system; there are differences between them at many levels that make a questionable basis for generalising this research concept from higher education to the other public service providers. More details on the research limitations and future research agenda will be provided in chapter 9.

1.8. Thesis Outlines:

This research conducted and deployed over ten chapters as portrayed in figure (1), and the following points illustrate the contents per chapter

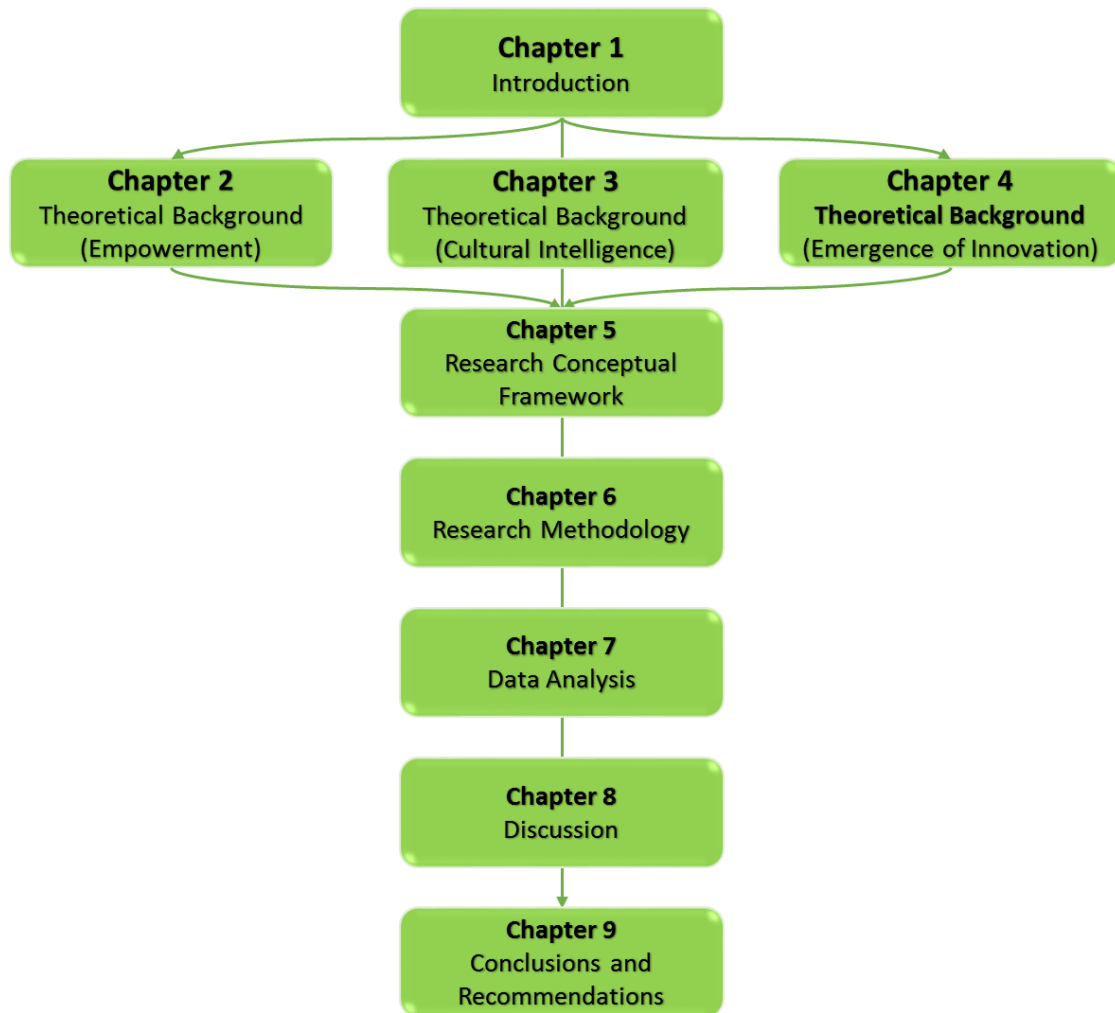


Figure (1) Thesis Outlines

- **Chapter 1: Introduction:**

This chapter presents a general overview of the research context, background, problem statement and questions that direct the whole research. Also, this chapter presents research aims, objectives, and hypotheses in the way through to concludes by introducing the research significance and novelty.

- **Chapter 2: Theoretical Background (Empowerment)**

The literature review in this chapter has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to this research. Also, a process of funnelling the founded results took place to identify the first central notion (Empowerment) characters and distinguishing features. Furthermore, this notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, these central notions were interlinked with the other two notions when applicable through the identified interactions and connections. Finally, such an intensive process has led to carefully develop the proposed research conceptual framework and to develop suitable methodologies to measure it.

- **Chapter 3: Theoretical Background (Cultural Intelligence)**

The literature review in this research has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to

this research. Also, a process of funnelling the founded results took place to identify the second central notions (Cultural Intelligence) characters and distinguishing features. Furthermore, the notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, this central notion was interlinked with the other two central notions, when applicable through the identified interactions and connections. Finally, such an intensive process has led to carefully develop the proposed research conceptual framework and to develop suitable methodologies to measure it.

- **Chapter 4: Theoretical Background (Emergence of Innovation)**

The literature review in this chapter has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to this research. Also, a process of funnelling the founded results took place to identify the third central notion (Emergence of Innovation) characters and distinguishing features. Furthermore, this notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, this central notion was interlinked with the other two notions when applicable through the identified interactions and connections. Finally, such an intensive process has led to carefully develop the proposed research conceptual framework and to develop suitable methodologies to measure it.

- **Chapter 5: Research Conceptual Framework**

This chapter presents critical reviews of the literature in relation to this research central three notions: employee empowerment, cultural intelligence, and the emergence of innovation. Also, the literature reviews were funnelled to become more relevant to the public sector settings, and at the same time, the alignments of these three notions' factors were investigated, and international best practices related to these three notions were carefully employed to serve public sector settings.

- **Chapter 6: Research Methodology**

This chapter introduces and explains the followed research methodology to pursue the study and investigate the assumed unidirectional relationships and associations between the defined variables in the research conceptual framework. Also, this chapter was structured to provide research outline, philosophy, approach, methodology, time horizon, technique and procedures. Furthermore, this chapter compares the used methods in similar settings, as well, discuss the instrument, measure, targeted sample, questionnaire, ethical consideration, and limitations.

- **Chapter 7: Data Analysis**

This chapter has been structured to discuss the analyse the collated data using the research developed instrument. The chapter starts with Descriptive Statistics followed by demographics, Common Method Variance, Validity and Reliability, Normality, Frequencies Analysis, and Hypothesis Testing through correlation and regression. All mentioned statistical tests have been carried out using the SPSS (Statistical Package for Social Sciences) software from International Business Machine Corporation (IBM). Since 1986, SPSS was used widely in research as this software has proven the ability to operate complicated statistical tests (Ann 2011) and (Field 2009).

- **Chapter 8: Discussion**

This chapter is designed to provide a holistic discussion of the research questions, data analysis, and outlines the findings of this research. There are four main sections in this chapter; the first one provides an overview of this research objective and proposes an Innovation Ecosystem for Public Sector Higher Education. The second section discusses the descriptive statistics for this research independent and dependent variables. The third section discusses the findings of the correlation tests that took place to validate the research hypotheses and compare the results with the literature review. The fourth section discusses the findings of the regression tests, then associates the results with the related literature, followed by discussion and conclusions.

▪ **Chapter 9: Conclusions and Recommendations**

The accomplishment of the research objectives, in addition to the main drawn conclusions, was presented in this chapter. Also, the resulted key implications from this research were consolidated and presented in the research focus areas. Furthermore, the robustness of the research methodology was explained, and the followed methods were addressed. Moreover, this research contribution to the body of knowledge was presented, and the value of this research was highlighted. Finally, research limitations that are considered as opportunities were stated in addition to identifying prospects for future research areas.

1.9. Introduction Summary

This chapter provided the concept, background, and rationale of this research that focuses on the background and current problem within the public sector higher education providers context. Based on that, the research questions were developed and followed by the research aims and objectives. In addition, the research hypotheses were developed to underline the research problems and concluded by introducing the research significance and novelty.

The next three chapters are presenting the Theoretical background of the research three central constructs: Empowerment, Cultural Intelligence, and the Emergence of innovation in the public sector service providers. The research questions will form the guide to these three chapters.

However, the door will always be open for emerging theories in the way to support this research aim and approach.

2. CHAPTER TWO: THEORETICAL BACKGROUND EMPOWERMENT

2.1. Introduction

The previous introduction chapter highlighted this research context, background, problem statement, questions, aims and objectives, hypotheses and concluded by introducing the research significance and novelty. The Theoretical Background in this research has been divided into three chapters, starting from chapter two that focuses on empowerment, followed by chapter three with a focus on cultural intelligence, and then, chapter four with a focus on the emergence of innovation in the public sector.

Guided by the research problem statement, questions, aim and objectives, and hypotheses, the literature review in this chapter has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to this research in addition to comprehensively respond to the research questions. Also, a process of funnelling the founded results took place to identify the first central notion (Empowerment) characters and distinguishing features. Furthermore, this notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, this central notion was interlinked with the other two notions when applicable through the identified interactions and connections. Finally, such an intensive process has led to carefully develop the proposed research conceptual framework and to develop suitable methodologies to measure it.

2.2. Empowerment

Individual empowerment is considered as a crucial element for organisations who are seeking to keep their business success and continuity in the global economic and competitive market. Innovation culture is necessary for the public sector always to produce what is expected from it at all levels. The individual empowerment will be discussed in depth in this section, as well as its causes and antecedents on individual and organisation innovativeness and success.

2.3. Empowerment Definition

The verbal definition of empowerment is acknowledged with the word power. In English, the idea inclines toward its unique importance of venture with legal power authorisation to represent some particular objective or reason (Rappaport 1987). The new meaning of the empowerment construct incorporates references predominantly to the power that creates and is acquired. Individuals are figuring out how to acquire more power over their lives, either independently from anyone else or with the assistance of others. The construct to be empowered emerge with both a process and an outcome where the individual thrust of acquiring a relative level of capability to influence the world (Staples 1990).

In the empowerment literature, the definition of empowerment is debatable and was mostly assumed rather than expanded. Empowerment was anticipated by (Berger and Neuhaus 1977) as a method for enhancing welfare services by approaches for intervening social foundations. On the

other hand, empowering employees as a concept started evolving since the 1960s, where Douglas McGregor and Likert as cited in (Uzunbacak 2015) have defined the “empower of employees” by self-management and involvement in the decision-making process within the organisation would “empower” them to be more capable of taking on responsibilities. Since the late 1970s, the term empowerment has been widely used by many speakers, public health, social services and psychology, and community development (Simon 1994). In this context, managers used to motivate employees and encourage them to engage by providing their suggestions in a way to reduce retention rates. However, when the competition was intensified in the 1980s and companies started to feel the market heat, such conditions have participated in the foreground the presence of the empowered employee who has the autonomy to manage and maintain customer needs towards satisfaction (Özveren 2006) as cited in (Uzunbacak 2015). As the market competition continually increased, companies started to feel the necessity of providing their employees with more authority to keep them in the competition zone. The author with view that, empowerment became an individual psychological need to an organisational norm to manage, maintain, and thrive in the market competition.

In the early 1980s; the literature had witnessed the emergence of the “Empowerment” as an organisational and social concept used by many scholars. Rappoport (1984) noted the fact that the definition of empowerment become easier by its absence, however when it comes to action, the definition becomes more challenging as it starts taking several forms based on the people and context. This understanding of empowerment definition was supported by Zimmerman (1986) as “asserting a single definition of empowerment may make attempts to achieve it formulaic or prescription-like, contradicting the very concept of empowerment”. In the same context, Bailey

(1992) agrees on the fact that the organisational projects and programmes are influencing the definition of empowerment, as it will be subject to the concerned people and the user setting. The author of this thesis view is consistent with the fact that, the term of empowerment refers to those designed measurements where autonomy and self-determination for employees are augmented to responsibly practising the authority. Hence, empowered individuals are able to professionally support and influence people to overcome challenges through best resources utilisation.

Empowerment notion in a more extensive scope could be described as a paradigm that connects individuals well-being, competencies, support systems, and proactive behaviour towards social policies and social change in a more significant social and political environment (Rappaport 1984). One might argue that Empowerment as a construct is creating an active community through building bridges between mental health and mutual support (Perkins 1995). In the same context, Perkins (1995) stated: “Empowerment-oriented interventions enhance wellness while they also aim to ameliorate problems, provide opportunities for participants to develop knowledge and skills, and engage professionals as collaborators instead of authoritative experts”. Rappaport (1981) built up the construct of empowerment theoretically and displayed it as a world-view that incorporates a social strategy and a way to deal with the arrangement of social issues originating from powerlessness. Therefore, the assumption here is that the primary focus of empowerment is more into identifying strength and capabilities to solve a social problem rather than classifying weaknesses and risk aspects.

Since the eighties, four main conceptual approaches have provided the framework for empowerment discussion as a concept and idea. According to Gutierrez and Ortega (1991), the first

approach is “ethnocentric” that have a focus on social issues and minorities challenges. The second approach is “conservative liberal” that considers the community as one unit (Berger & Neuhaus 1977). “Socialist” is the third approach that is based on equity and requests of value and social obligation in the treatment of social issues (Boyte, 1984). The fourth approach was based on empowerment consideration as a significant and professional execution of democracy that will contain each actual social, ideological current in the law based society (Rappaport 1984). These four approaches start moulding into more work-related matters like motivation, processes, and outcomes over time.

According to Uzunbacak (2015) “The empowerment was given its modern usage towards employee empowerment by many scholars like Harrison and Kanter in 1983, Bennis and Naus in 1985, Burke and Neilsen in 1986, Block in 1987, and House in 1988”. Some scholars have considered empowerment contemplates fall under the authority of the supervisors, while others have proposed that empowerment as the inner feelings and opinion, and that their inspiration and their trust in themselves, their insight and aptitudes urge their desire to make an action (Peccei and Rosenthal 2001). In the same context, (Sahoo et al. 2010) has provided a more precise definition of empowerment by increasing employees autonomy, self-confidence, and decision-making by increasing their roles and responsibilities through de-centralised processes. *Based on the above literature debate the author hold the view that, the meaning of empowerment from individual and organisation prospectives is to trust and motivate employees through decentralising the authority to increase individual autonomy on decision-making, higher levels of engagement, and controlling events aligned with their organisation objectives.*

2.4. Empowerment in Context

Empowerment is both a community value orientation and a process that theoretically form an understanding, which results of endeavours to practice control that influences individual life, organisation operations, and community quality life (Rappaport 1981) and (Zimmerman and Warschausky 1998). There is a necessity to distinguish between qualities that are underlining the approach to empowerment from social change and theory prospectives; for change to occurs, the empowerment qualities proposes targets, objectives, and strategies while empowerment theory offers standards and outline for shaping our knowledge (Perkins and Zimmerman 1995). It is acknowledged that the development of empowerment theory is contributing toward advance the construct of empowerment through providing measurements in several contexts to investigate empowering processes in a focus and unique approach (Zimmerman 2000). In the author opining this differentiation between empowerment as a community value approach and process shows the significant influence of empowerment at individuals, organisation, and community levels.

Some scholars like Mechanic (1991) has defined the empowerment at the individual level that might be observed as a process of creating a correspondence between goals and the way of accomplishing them al the way through to learn how to connect them with endeavours and life outcomes. Empowerment at organisational level was defined by Orgambídez-Ramos and Borrego-Alés (2014) as structural empowerment that targets individual psychological side through motivation and connection with other, and through organisation resources allocation and management style were individual are connected with the organisational goal and have a level of autonomy in addition to participation in decision making. The empowerment definitions from

Environment-Individual perspective were introduced by (Cornell Empowerment Group 1989) with a focus on empowerment as a local community process that is based on mutual respect, caring and providing access to valued assets with privileges for those who are lacking such access. Another definition by (Rappaport 1984) is providing multi-levels for defining empowerment as a viewed process where individuals, organisations, and communities gain dominance over their lives but without providing a cross-sectional process analysis over these three levels. It appears this is a neglected or still poorly understood area of research. This was the motive in this research to interlink empowerment at the individual, organisational and community levels to create a platform to support the emergence of innovation in the public sector higher education service providers.

These conceptual definitions for empowerment provides two segments for this construct. The process is considered the first one in which endeavours to apply control comes from the central level, and the second is the participation with others to accomplish objectives, endeavours to access assets, and some basic comprehension of the sociopolitical environment are fundamental segments of the construct (Zimmerman 2000). Also, by integrating this framework at an organisational level, empowerment may incorporate organisational processes that lead to enhancing employees engagement, which will increase organisational effectiveness for better objective accomplishment (Zimmerman 1995). Furthermore, when this framework is expanded at the community level, empowerment may refer to activity aggregation to enhance community quality life and to improve the relations with community establishment (Rappaport 1984). Finally, the empowerment from process and participation should be integrated in a way to facilitate gaining the required and desired outcomes. Therefore, this concept of process and participation will be further discussed in this

chapter to develop the innovation human and system drivers following the research questions, objectives, and proposed hypotheses.

2.5. Empowerment as a Theory

This section sheds light on the most popular empowerment theories starting from the word power to the most modern empowerment theories.

2.5.1. The Word Power

There were many definitions for the word power over time until one of the scholars in the social sciences (Weber 1947) gave an organisational dimension through linking authority and rule to power as a factor of domination for a person over resistance. Weber provided three sources of legitimate power through authority support: charismatic, rational-legal, and traditional. This model (organisational structure power and its influence on a human) built by Weber suggested that organisational power of bureaucracy is mechanised employees through job routines, which limits the flexibility in organisational structure (Morgan 2014). In the sixties, (Dahl 1961) through his theory of community power, focused on the dimension of individual power in the context of community boundaries. According to Dahl (1961), the definition of power is an individual dominant authority over the particular community that forces followers to obey his or her preferences and kept them from practices what they want to do.

In response to Dhal's model, a "two faces of power" model was developed by Bachrach and Baratz (1962) to discuss the passive face of power that prevents decision making through mobilising bait strategies, which creates power conflict serves an individual or a group relative to others (Clegg 2002). This model had a further development by (Luke 1974) to migrate from organisation structure power and community power to the third latent dimension of power based on the connection of political preferences and real interest. According to Luke (1974), this type of power will influence people through embedding in their minds to do what in opposition to their own good. Consequently, this kind of power is focused on building a controlled environment by creating routine practices where blaming policy leads the management style. It is possible that individuals are going to do specific processes as a matter of their daily routine without knowing why they are doing it and what is the value behind it.

Foucault (1979) led the debates on power definition to all social sciences fields by introducing the "decentralisation of the power position" concept that supported (Giddens 1982) to introduce his inclusive social theory named by Structuration or Duality of Structure. According to Giddens (1982), power is a social component and essential factor (not quality resources of people) that is generated, influenced, and limited by them. The empowerment debate over two decades came to the fact that the scholars of the social sciences built a power model from the sociological point of view as the overt face (open discussion), covert face (non-discussion), and Consciousness and Perception (Saden 2004). This conclusion confirms that the definition of empowerment is debatable and was mostly assumed rather than expanded, and it depends on who and where this concept is going to be utilised.

2.5.2. Empowerment Theories:

With reference to Village Earth (2011), the word empowerment first came through an article called “Toward Black Political Empowerment – Can the System Be Transformed” written by Conyers (1975), and then, spread from black rights into many other forms. The next adoption for empowerment was from the social work community in 1978, where O’Connel (1978) used the terminology of empowerment in the article titled “From Service to Advocacy to Empowerment”. Also, the word empowerment was employed in social policy through the Perlman (1979) article titled “Grassroots Empowerment and Government Response”, and then utilised by health scholars like (Sternsruud and Sternsruud 1982) who wrote the article titled by “Counseling for Health Empowerment”.

In the eighties, the empowerment construct started being employed for women and poor people as marginalised categories from the community. Women’s empowerment was discussed in the Women’s Studies International Forum through Moglen’s (1983) article titled “Power and Empowerment”. The construct of empowerment continued to focus on these marginalised categories till 2010 and beyond, like Wallis (2010) who presented the article named “Power and empowerment: Fostering effective collaboration in meeting the needs of orphans and vulnerable children”. With reference to Adams (2008), there are many theories around the empowerment construct depends on the related hosting environment. The most related theories to empowerment are discussed in the following subsections:

2.5.2.1. Black Empowerment

In the late sixties, the black empowerment started evolves as a civil rights movement that could found in the writing of Barbara Solomon (1976) who defined empowerment as “activities aiming to reduce the powerlessness created by being a member of a stigmatized group”. She used the concept of empowerment in the context of social intervention with individuals, groups, or communities in views of systems and institutionalised discrimination. According to Solomon (1976), the problem of powerlessness emerged by direct block caused by political sanctions and lack of resources, and indirect block caused by underdeveloped human resources who lack interpersonal skills as part of a group. Also, stigmatisation from the wider society prevented the development of strong community resources like schools, community associations, parks, and civic society (Solomon 1976). Furthermore, the negative valuation that individuals and groups have been exposed to has created a “power lack” rather than “power failure” because they accepted this adverse valuation as a correction without exerting and power (Solomon 1976). She added that when the individuals are surrounded by family or group relationships that forms stigmatised cultural category, they experience a sense of belonging that prevents them from a negative valuation and at the same time facilitates goals achievement through personal, interpersonal, and technical resources.

Solomon challenged the widely held views on empowerment by providing two main aspects for empowerment: first, application of empowerment theory into practice, and second, the transformations of individual adverse experience caused by the exposure to signalisation or system discrimination into decisive social action to take power (Adams 2008). This concept showing the

connections between empowerment at the individual, group, organisation and community levels in a cross-sectional setting, which provide a piece of evidence that empowerment is interlinked at all these levels and has cross-sectional influences. This conceptualisation of empowerment is consistent with this research approach in linking innovation human drivers with innovation system drivers as part of this research conceptual framework to increase the emergence of innovation opportunities.

2.5.2.2. Consciousness-raising and Empowerment.

Paulo Freire is considered in Adams (2008) as the first reference for many liberationist approaches to empowerment in general and more specifically in the areas of community work and collaborative research. The following are Freire's three main contributions in the area of empowerment:

- a) Freire promoted democracy as a method of educating people rather than merely as a component in education. Freire (1974) stated, "the role of the educator is not simply to transmit knowledge to the student, but to seek alongside him the means to transform the world that surrounds him". Freire (1974) supported the notion of the empowerment of the individual to become aware of his own situation as a "subject" so may obtain the "instruments that would allow him to make choices" and become "politically conscious".
(Individual Power)
- b) Freire (1974), in his argument "advocated reciprocity in the relationship between the teacher and the student, in the idea of the teacher as learner and the learner as teacher" Adams (2008). He also added "Policy and practice in social care and social work in

Western countries has not tackled this in relation to blurring boundaries between practitioners, carers and people who use services” as concluded by Adams (2008).

- c) The concept of “conscientization – the growth of the critical consciousness.” has reinforced the theoretical underpinning of the empowerment process and provided the link between individual and collective empowerment. Freire (1990) identified the process of conscientization as a characteristic part of the cultural activities to break the existing culture of silence in the 1960s and 1970s. He proposed to recognise human beings as active agents who transform their world as a critical dimension of consciousness. This understanding is consistent with the assumption in this research that employee empowerment in the core of the proposed innovation ecosystem towards adopting innovation in the public sector higher education system providers with support from a line manager, organisation and community.

2.5.2.3. Radical Therapy and Empowerment.

The radical movement to empower patients emerged as a critique of the traditional treatments and medically dominated psychiatry (Sedgwick 1982). The aim was to challenge the dominant authority of the psychiatrists as a powerful professional (Steiner 1974). However, patient empowerment started to be a significant broad-based movement 15 years from that date (Adams 2008).

The notion of psychological empowerment (PE) started to be studied in a concept that includes intrapersonal, interactional, and behavioural components (Rappaport 1984). According to

Zimmerman and Rappaport (1988), the first constituent is intrapersonal which is defined as the individuals capacity to exert control, perceived competence, and influence their social and political regimes as well as exert control over community challenges. The second component is interactional which is defined as the communications among individuals along with their environments which empower them to have the knowledge of resources mobilisation, casual understanding agents, critical environment awareness, and “the development of decision-making and problem-solving skills” to successfully master their social or political systems as argued by Zimmerman et al. (1992). The third component is behavioural, which refers to individual participation that influences the organisational social and political environment within a particular community and voluntary actions that lead to psychological empowerment (Berger and Neuhaus 1977). This psychological empowerment (PE) from Zimmerman and Rappaport (1988) is been adopted in the employee empowerment construct as part of this research conceptual framework in chapter five, where this concept will be further discussed.

2.5.2.4. Marxist Critiques and Empowerment.

Economic groups were studied by Marxist ideologists from a social, political and economic point of view. John (2012) stated that “The simple idea is that the policy process, far from being a rational weighing up of alternatives, is driven by powerful socio-economic forces that set the agenda, structure decision-makers choices, constrain implementation and ensure that the interests of the most powerful determine the outputs and the outcomes of the political system”. In other words, the government’s function is to formulate public policies and implements them to regulate the economy and maintain its stability between social and political aspects (Barry 2012). He also

said, “Marxism studies the socio-economic power that remains the stems since the beginning of human society, perceiving the human organisation as a struggle between working-class people and bourgeoisie”.

In the context of Marxist criticism, Tayson (2016) stated: “ Marxist criticism underscores the existence of a socio-economic division among people, affecting them higher than other ideologies such as religion, race, ethnicity, gender or any other”. According to Barry (2012), the sources of power came from the ownership and control of the economic property, government, wealth, and productive assets of the society, including control of finance. Also, the sources include control over ideas through the media and processes of socialisation, more generally, such as education, and ideology. Consequently, individual empowerment highly depends on the community (government, economy, social, and culture) overall system and support.

Social theorists like Antonio Gramsci, who was influenced by Marxism have taken on board theories rooted in critiques of the status quo in society (Adams 2008). Gramsci (1971) developed a Marxist theory of hegemony (the ultimate power to control), and the ways a ruling class in society are practises their authority through subtlety and persuasiveness techniques. Gramsci (1971) also added that the domination of powerful people in the society ensured that their legitimacy and the basis of authority is not subject to question. People, in this case, became subjugated and seemed to accept the fact that they are followers to such domination as a result of the powerlessness.

Individual empowerment and radical social work were connected by Thompson (1993) as “an approach to social work which seeks to locate the problems experienced by clients in the wider

social context of structured inequalities, poverty, inadequate amenities, discrimination and oppression”. He also added, “It sees social work as primarily a political venture, a struggle to humanise, as far as possible, the oppressive circumstances to which clients are subject”. Furthermore “ It is premised on the key notion of empowerment, the process of giving greater power to clients in whatever ways possible – resources, education, political and self-awareness and so on” as argued by Thompson (1993). Finally, Adams (2008) has concluded that “this extract glosses over the inherent paradox of professional involvement in empowerment, which revolves around the desirability of professionals giving power to other people”. As a conclusion, individual empowerment from organisational and community perspectives depends on to which level the adopted systems are facilitating empowerment through the policies, regulations, and resources allocation. This concept has been used in developing the innovation system drivers with more alignment to individual empowerment as shown in chapter five.

2.5.2.5. Feminist Empowerment Theories

Feminist theories had evolved since the early eighties when the feminists challenged the male dominance and gender imbalances of sociological theories through the practice of protest and empowerment (Rowbothan et al. 1980). The next one was the anti-nuclear protest at Greenham Common has symbolised women’s activism and open the door to people to learn from women’s experience in networking and non-macho style of resistance (Lowry 1983). Women in MIND was established by women in mental distress, which include several centres that support women to share a common experience and begin to take control of their health (Women in MIND 1986). Also, workshops and self-help groups were facilitated by The Women’s Therapy Centre to support

women in how to deal with depression, agoraphobia (perceives the environment to be unsafe), and relationship challenges (Krzowski and Land 1988). These theories show that culture and system influence on the individual empowerment in positive and negative ways, and to which extent they affect individuals life, organisations, and the community.

In the nineties onward, all these initiatives were linked with other social works like ethics and values (Wise 1995), education and training (Phillipson 1992), community care (Orme 2001), anti-racist and anti-sexist practice (Dominelli 2002). The main contribution of empowering feminist perspectives presented in research by introducing empowerment through a cohesive integration between ideas and theories into social, historical, and political contexts (Carr 2003). These theories are showing the cultural perspective in a certain society and how this concept affects individuals, groups, organisations, and community. Cultural norms, needs and expectations will be integrated into the innovation drivers (Board of Innovation Provision, Environment Readiness) and in the Cultural Intelligence construct as discussed in chapters four and five.

2.5.2.6. Pluralism Theory and Empowerment.

This theory is related to the perspective where individuals are participating in the political grounds through interest groups, where political power is dispersed, and none of them will dominate the system (Miller 1983). Interest groups could participate and compete despite their size because of government protection and the acknowledgement of diversity in the political context (Rohman 2014). Consequently, democratisation concept will be achieved by political power distribution on the interest groups where all get the benefit of power (Miller 1983). The government

will play the role of supervisor and mediator to facilitate for groups developing maintaining their strategies according to their interest, as well, the government will try to resolve the conflicts amongst groups or with groups and government (Rohman 2014). Based on that, the government will keep the balance and prevent tyranny or sovereignty owning between all interest groups (Self 2010).

However, if the dominant groups are powerful, this could limit the government from playing the role of referee through practising political pressure in which small groups have a weak influence on the political pressure (Ellis 1980). According to Rohman (2014) “Pluralism Theory is helpful in identifying political actions which stress the dynamic of interest of groups for the idea political system in democratic countries, however, this system is difficult to implement”. This system implementation challenge, as argued by Rohman (2014) is due to the fact that “the concept of the political power dispersing, needs good coordination. So when coordination cannot be reached, this may lead to inefficiency and may not be effective.” In addition to the political bias that passively contributes to the system inefficiency where the conflict of national and their group interest cause complexity and lead to system failure. Hence, the government has a major role in creating balanced and organise working environemtns through policies, rules, and regulations. This concept been added into the innovation system drivers more particular in Environment Readiness facet from Innovation system Drivers.

2.5.2.7. Elitist Theory and Empowerment

The concept “Elite” refers to a ruling minority that possesses control over the most essential power resources in society. Lopez (2013) stated that “the core of elite theory relies on explaining elite behaviour, elite interaction, elite transformation and, ultimately, the connection between those instances and state outcomes”. The elite theories focused on society from the domination point of view and considered two society classes: the dominant minority and the dominated majority (Bottomore 1993). This minority is a small size group that has material, intellectual, or moral superiority in addition to organisational skills to always maintain their position in ruling societies (Mosca 1939). Also, force and persuasion are other psychological talents that the elite are possessing and using for their anchored domination (Pareto 1963). In this context, Robert Michels, as cited in (Beetham 1977), stated that the elite’s unique domination talents and skills are enabling them to extend their domination to the large-scale organisation.

Max Weber (1992) is considered as the founding father of elite theory through his domination theory. Weber established the fundamental pillars of elite theory through concepts of power and domination, political parties, and the fact that social classes are not inherently social players. The classical Elite theoretical tenet was focusing on power stratification, universality, and the treatment of elite characteristics as crucial explanatory variables. The second tenet was mainly about power holders’ capacities to organise themselves and establish cohesive groups that produce irresistible power. The third tenet was about connecting elite group along with other social forces and ethno-racial groups and was considered by many scholars as an essential condition for the elite to exert power. The fourth tenet was about access to elite and incumbents succession who is having unique

attributes (e.g., wealth, prestige, education) that allow them to enter the group and promote through following specific corporate hierarchies, political party machines. The fifth tenet is focusing on how elites typically exert and exercise their power.

Many scholars like (Wesolowski 1977) and (Etzioni-Halevi 1993) have developed the elite vision of power structure though taking elites concept to a broader power and stratification schemes through power sources complexity, structure, and social classes like “crafters” and “sustainers” of the social-democratic regimes. In this notion, the definition of the elite as the most powerful minority came from political terms, and the definition of the elite as classes in the economic terms as “owners” and “workers”. According to Schumpeter (1954), elites form a crucial component of the modern democracy that put political leadership in the regular election competitions. Higley et al. (2006) explored the relations between elite and regime types of power through focusing on structural integration and value consensus that are considered as political stabiliser and regimes democratic character. As a conclusion, this theory shows the elite group who have the needed resources, organisational skills, intellectual qualities from several fields, and persuasion capacities could form a cohesive group with driven objectives and outcomes within specific organisations. This group has a better understanding of their organisation abilities and capabilities in addition to government policies and regulations, cultural norms, market and community needs, which support in developing solutions that are based on the internal and external environments needs and expectations. This concept was adopted in creating the Board of Innovation Provision as part of Innovation Human Drivers to create an innovation booster to support innovation generation and implementation in the public sector higher education service providers.

2.5.2.8. Structural Empowerment Theory

To examine the empowerment through organisational paradigm, Kanter (1993) has introduced the characteristics of an organisational situation that either limit or boost optimal job performance, regardless of employee tendencies or predispositions. Kanter (1993) has defined the power as “ability to mobilise resources to get things done”. Employees will be empowered if they have access to resources, information, support, and opportunities to learn along with career advancement as without the access they became powerless. According to Greco et al. (2006) resources, information, support, and progression opportunities are considered the lines of power and properties of structural empowerment within the organisation. These areas of empowerment were used in this research conceptual framework related to employee empowerment.

These lines of structural empowerment in the organisational context as described by (Orgambídez-Ramos and Borrego-Alés 2014) are two types, formal and informal. They have described the informal power as encouraging positive relationships between all employees and leadership at all organisational levels that result in successful alliances. They also defined the formal power through job context where such jobs are centralised, highly visible, and provide discretion or flexibility on the requirements for work accomplishment. The informal power as stated by Laschinger et al. (2004) is “is derived from social connections, and the development of communication and information channels with sponsors, peers, subordinates, and cross-functional groups”. On the other hand, the formal power according to Orgambídez-Ramos and Borrego-Alés (2014), is “derived from specific job characteristics such as; flexibility, adaptability, creativity

associated with discretionary decision-making, visibility, and centrality to organizational purpose and goals”.

Access to these lines of structural power will have a positive impact on the organisation structural empowerment (Kanter, 1993). According to Laschinger et al. (2004), access to these four lines of structural power can be performed as follows:

- 1- **Support Access:** continuous hierarchical guidance and response from subordinates, colleagues, and superiors.
- 2- **Resource Access:** individual ability to acquire financial support, time, workforce, materials and supplies as required to complete the work
- 3- **Opportunity Access:** opportunities related to individual professional development through increasing knowledge and skills, and opportunities for career advancement within the organisation
- 4- **Information Access:** individual workplace effectiveness through having the necessary knowledge to perform the work. This access includes technical knowledge, expertise, policies, and a decision that supports work accomplishment.

Based on Kanter’s four lines of structural power, the management is mandated to empower employees by providing access to these lines and create a working environment that increases work effectiveness through employee participation to accomplish work in addition to providing ongoing opportunities for employee development (Mendoza-Sierra et al. 2014). In conclusion, the primary focus of Kanter's Structural Empowerment Theory is the actual conditions (four lines of structural

power) from the work environment (the organisation) that influence employee empowerment and not how the employee perceives them. The structural empowerment was adopted in this research conceptual framework related to line manager support and organisation behaviour.

2.6. Summary of the Theoretical Background for Employment

Individual empowerment is a modern management approach that organisations need to adopt in order to survive within the competitive conditions grounded by industrialisation and globalisation (Uzunbacak 2015). Employee Empowerment is participating in increasing their performance towards adopting and implementing innovation at the individual, group, organisation, and community levels. Many theories were established to define and measure the notion of empowerment as a crucial element for organisational development, achieving aims and objectives, and business continuity. *Individual empowerment, in general, is to increase employee autonomy, access to resources and decision making within effective organisational communication channels to achieve short and long-term goals.* Such empowerment requires a supportive working environment that includes continuous professional development to facilitate empowerment outcomes at individual and organisational levels. For individual empowerment, the outcomes are and not limited to job satisfaction, achievements, career progression, increase innovation, knowledge sharing, teamwork, responsibility, leadership, control events, positive behaviour, and motivation. For organisations empowerment, increase creativity and innovation, better employee engagement and performance, increase competitive edge, better response to customer needs, “create new research fields, new ideas, new product that creates a new demand, and it comes a new

market which drives the industry and the economy towards a higher level of development” as stated by Al Zahrani et al. (2012) and adopted in this research conceptual framework.

One of the most popular theories of empowerment was established by (Zimmerman 2000) when he introduced a model of “Process” and “Outcomes” for Empowerment for individual, organisation, and community. He identified the main facets of empowerment: Psychological Empowerment (PE), Organisational Empowerment (OE), and Community Empowerment (CE). This model was used and enhanced by many scholars like (Uzunbacak 2015) who has integrated some facets and features to introduce empowerment facets that are more connected with organisational innovativeness: Psychological Empowerment (PE), Behavioural Empowerment (BE), and Community Empowerment (CE), Social and Structural Empowerment (SSE). More details on these models will be presented in the section of the conceptual framework by linking the empowerment construct into cultural intelligence and innovation within the public sector context. (Zimmerman 2000) Theory and its evolvement will be taken into further investigation. Also, the eight empowerment theories would be utilised to support the conceptual framework constructs and related variables and measurements.

More details about utilising the empowerment models of Zimmerman (2000) and Uzunbacak (2015) along with empowerment theories from this chapter that are in line with this research problem statement, objectives, questions, and hypotheses are provided in Chapter five Conceptual Framework. Next chapter in presenting the second part of this research Theoretical Background that focuses on Cultural Intelligence.

3. CHAPTER THREE: THEORETICAL BACKGROUND CULTURAL INTELLIGENCE (CQ)

3.1. Introduction

This chapter is the second part of this research Theoretical Background. Guided by the research problem statement, questions, aim and objectives, and hypotheses; the literature review in this chapter has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to this research in addition to comprehensively respond to the research questions. Also, a process of funnelling the founded results took place to identify the second central notions (Cultural Intelligence) characters and distinguishing features. Furthermore, the notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, this central notion was interlinked with the other two central notions, when applicable through the identified interactions and connections. Finally, such an intensive process has led to carefully develop the proposed research conceptual framework and to develop suitable methodologies to measure it.

3.2. Cultural Intelligence (CQ)

CQ has witnessed significant interest in research because of the world globalisation, connected economics, and technology that are connected to the world at many levels (Ott and Michailova 2016). In the same context, the world and businesses are connected, which requires to have a certain level of Cultural Intelligence in order to interact and manage a business in a multicultural working environment (Ang et al. 2007). As innovation requires the right working

environment to emerge, CQ is almost certain that playing a significant role in generating, adoption, and managing innovation as concluded by many scholars (Elenkov and Manev 2009), (Hudea 2014) and (Lee et al. 2013). More details on CQ will be provided in the upcoming pages.

3.3. CQ Definition and Background

The notion of Cultural Intelligence (CQ) emerged into the literature by Earley (2002) as the functional capacities of a person to adopt a new cultural context. Earley and Ang (2003) argued “CQ is a cognitive, motivational, and behavioral skill set that allows individuals to make sense of the complexity in culture-related issues, to predict the behaviors of people from other cultures, and to adapt seamlessly to various foreign settings”. In the same context, Awan and Kraslawski (2017) support the fact that CQ indicates the person’s ability to partner and to work collaboratively through determining the success of creating proper relationships within the multicultural working environment. On the other hand, the informal relationship that includes joint problem solving, joint planning, and collaborative communication as main components are facilitating the understanding in dealing with partners through weighing the importance of information sharing and the adaptability to develop and maintain partnerships (Ang and Inkpen 2008). Hence, high individual CQ means effective relationship management in interacting with partners from several cultural backgrounds as concluded by Thomas et al. (2015).

Johnson, Lenartowicz and Apud (2006) defined CQ as “the ability to function effectively in another culture or a culturally diverse setting” as such ability “is essential for the firm as it

facilitates understanding, adaptation, communication, and coordination in diverse settings”. This definition received support from researchers by showing that individual performance, cross-cultural interaction, and decision-making are influenced by the individual effective cultural capability (Chen, Liu and Portnoy 2012). In the same context, Gunkel, Schlaegel and Taras (2016) concluded that the individual cultural background is influencing individuals decision-making and the way they tackle challenges related to conflict management in addition to communication management. However, there is a need to further the research in the area of managing informal relationships to determine the required capabilities and skills to lead the success in managing such relationships and in addition to how CQ is contributing to the organisational performance (Awan & Kraslawski 2017).

The rapid globalisation transformations that resulted in connecting the whole world have forced employees from several levels to interact with their peers from several cultural backgrounds (Chandan 2015). Companies who are seeking to thrive in this global economy need to create a new breed of managers with capabilities to operate in a multicultural environment (Kanter 1995). To understand the abilities and capabilities that this new breed of managers should possess; there was a need to develop a different notion of intelligence besides the (General Intelligence-IQ and Emotional Intelligence-EQ) that should target the individual capability to provide solutions for cross-cultural challenges (Ng et al. 2012). Based on the theoretical framework of multiple loci of intelligence, which is focusing on the traditional academic and cognitive challenges that was presented by Sternberg and Detterman's (1986) who introduced a set of individual capabilities “behavioral, motivational, and mental” as a cultural intelligence (CQ) that is aiming at resolving multicultural challenges. Therefore, the need to have a new intelligence notion came from the fact

that the new technologies and connected economies require a level of communication with respect to the cultural differences that might support or interrupt business between organisations and individuals from several cultural backgrounds.

According to Sternberg and Detterman (1986), “motivation, cognition, and metacognition” are the type of capabilities that exist in the head of an individual, while individual behavioural capabilities could be recognised through their explicit actions. When it comes to motivational intelligence, it is defined as the mental capacity of the individuals in sustaining their energy on specific conditions in addition to considering the necessity of the motivational capabilities in creating solutions to the real-world problem (Ceci 1996). For cognitive intelligence, it is the individual capacity to acquire knowledge of other cultures and use it in the current and future situations (Ott and Michailova 2016). The Metacognitive intelligence was defined by Awan and Kraslawski (2017) as “the extent to which an individual’s level of cultural awareness and mindfulness use to acquire and understand knowledge”. Finally, behavioural intelligence is more about individual verbal and non-verbal actions during multicultural situations (Earley and Ang 2003). These four facets determine the individual capacities to interact, adapt, and adjust to the foreign partner needs in the multicultural working environment.

In summary, individuals and businesses commonly come to multicultural situations that require a level of cultural intelligence to act and perform effectively. CQ is a notion that focuses on the individual abilities and capacities to perform in settings that are characterised by cross-cultural at the individual, group, organisation, and community.

3.4. Theories of Intelligence

There are a variety of theories that have been constructed by many scholars related to intelligence. However, the author is going to provide an overview of the most influential theories related to this research showing the evolvement of the Intelligence Quotients and how the need to have a quotient like CQ raised to support individual performance in multicultural settings:

3.4.1. General Intelligence – by Charles Spearman (the Father of Intelligence)

Spearman (1904) introduced a new “general factor of intelligence” or “g” as “mental energy that leading part of intelligence, and is displayed by the ability to handle not merely abstract ideas, but above all symbols”. Spearman develops a statistical technique named “factor analysis” to measure individuals mental abilities through testing variables correlation, saturation, and loading into a general factor. Through exploring the results of students, Spearman found that variables are sharing common sources of variance with different levels of saturation with a general factor that he named “g” (Kane and Brand 2003).

By using a cognitive test Spearman (1927) that identified three primary processes that construct the general factor “g”, the first process is “the apprehension of experience” where an individual could solve more complex problems based on his experience sphere. The second process is “education of relationships” which is the logical relation between “two stimuli”. Finally, the third process “education of correlates” where similarities are noted between two stimuli. According to

Kane and Brand (2003) “Although Spearman recognised that g may not account for all the variance in a matrix of scores, he preferred to emphasize “g” as the explanatory factor in intelligence”.

Spearman has provided evidence that all intelligent behaviour is derived from a unitary quality pool of mental energy by providing insights on the individual psychology of intelligence. Also, the statistical method of factor analysis that he has invented is a unique tool to determine the score of mental intelligence through correlating all mental tests. In his test, correlated variables will be modelled in clusters to create information on individual intelligence capabilities. Therefore, Intelligence quotient (IQ) score is considered as a good example that reflects individual intelligence capabilities. Hence IQ is not providing support to individual behavioural and motivational aspects to perform within certain environments, which supports the need to develop a separate notion like CQ to tackle such areas.

3.4.2. Primary Mental Abilities – by Louis L. Thurstone

Thurstone (1924) defined intelligence, as “Intelligence, considered as a mental trait, is the capacity to make impulses focal at their early, unfinished stage of formation”. He also added, “Intelligence is, therefore, the capacity for abstraction, which is an inhibitory process”. Also, he has introduced a differing theory of intelligence as he described the intelligence through seven mental abilities rather than viewing intelligence as a sole general ability (Thurstone 1938). These seven factors (primary abilities) are “Spatial visualization, Word fluency, Perceptual speed, Verbal Comprehension, Numerical Ability, Reasoning, and Associative memory” Thurstone (1938).

Thurstone's primary abilities model has challenged the unity paradigm of intelligence that was developed by Spearman (1904). Based on the Spearman (1904) factor analysis, all mental test scores are tending to load in a "pool" as one major factor that has been named later by a general factor or "g". According to Thurstone (1938), the Spearman's "g" was generated by using mathematical procedures that defined the intelligence as a statistical artefact result; which is not based on mental behaviour. He argued that intelligent behaviour emerges from the seven factors "primary abilities" and not from one general factor. Also, Thurstone through analysing a controlled sample of candidates who are holding the same range of IQ, he found - through the clinical utility model he followed - differences in the profiles of primary mental abilities for this group that resulted in supporting his theory. When he applied the test to children that belong to an intellectually heterogeneous group, he found more evidence on "g" as an intelligent behaviour rather than segregated seven primary abilities.

However, Thurstone produced his theory final version by integrating his seven primary abilities concept along with Spearman's general group "g" concept as a compromise where both concepts are present (Thurstone 1973). This construct facilitated for scholars to develop hierarchical theories and multiple intelligences theories (Ruzgis 1994) and still lack individual performance in multicultural settings.

3.4.3. Multiple Intelligences (MI) – by Howard Gardner

Howard Gardner has developed his theory of multiple intelligences in the late seventies. Gardner (1983) argued that individuals hold eight autonomous intelligences that could be used

individually or corporately to provide society based solutions for their life challenges. In this context, Gardner (1999) has identified these eight bits of intelligence as “linguistic intelligence, logical-mathematical intelligence, spatial intelligence, musical intelligence, bodily-kinesthetic intelligence, naturalistic intelligence, interpersonal intelligence, and intrapersonal intelligence”. By this definition, Gardner has departed from the Spearman’s unity of intelligence to conceive individual intelligence as multiple in nature.

According to Gardner (2006) MI theory, individuals who exhibit “a high aptitude in one intelligence” may not have the same level of the other intelligence. This argument means that individuals could have a unique mastery of one intelligence trait that distinguishes them from the other. Also, Gardner (1983) argued that individuals who born with a high intellectual potential in particular intelligence would perform better than others, however, such capabilities could be developed in relevant experiences with a more extended lifespan so all individual could become experts in a selected intelligence domain.

Intelligences	Description
Linguistic	An ability to analyze information and create products involving oral and written language such as speeches, books, and memos.
Logical-Mathematical	An ability to develop equations and proofs, make calculations, and solve abstract problems.
Spatial	An ability to recognize and manipulate large-scale and fine grained spatial images.
Musical	An ability to produce, remember, and make meaning of different patterns of sound.

Naturalist	An ability to identify and distinguish among different types of plants, animals, and weather formations that are found in the natural world.
Bodily-Kinesthetic	An ability to use one's own body to create products or solve problems.
Interpersonal	An ability to recognize and understand other people's moods, desires, motivations, and intentions
Intrapersonal	An ability to recognize and understand his or her own moods, desires, motivations, and intentions

Table (1) Gardner's Eight Intelligences

Adopted from Davis et al. (2011)

In exploring MI theory as a pluralistic of intelligence, each individual has a unique profile of the eight intelligence with level variation from one to another, but this does not mean that it is a must that individual will have a superior aptitude in one or more intelligence (Davis et al. 2011). According to Gardner (1999), individuals have a full range of intelligence that defines them as a human being from the cognitive point of view. He also added, the intelligence profile is unique to each individual and cannot be precisely imitated by others.

In the critics of Gardner's theory, Gottfredson (1997) cautioned that "Labelling other abilities and traits as other 'intelligences' creates only the appearance, not the reality, of multiple equally useful abilities". However, despite this critic and many others, MI theory is widely used in many occupational spheres, and been used as one of the bases to hiring, assembling, or personnel placement (Moran and Gardner 2006). Also, MI has a significant influence on education practices by establishing a promising foreground for effective teaching and learning as stressed by Birchfield

et al. (2008). Likewise, Davis et al. (2011) added in the same context, “as lifelong learning becomes more important around the world, the prospects of developing, maintaining, and enhancing the several intelligences gains urgency”. However, MI ideas are providing education with a congenial goal for deep educational understanding, and should not form an educational target as educational outcomes should be emerged and identified by responsible leaders and citizens (Gardner 2006).

In conclusion, MI theory is providing ideas with a type of flexibility to be adopted by many fields like education, business, and in daily routine connected to emotional intelligence and social intelligence (Goleman 2006). It is likely that Gardner’ eight intelligence traits will subject to be examined and refined based on the field study. However, Davis et al. (2011) concluded that “what is most likely to last in MI theory is the set of criteria for what counts as intelligence and the idea of intelligence as being pluralistic, with links to specific contents in the human and primate environments”. Hence, one of the main conclusion that individuals who lack a particular type of intelligence could be trained on such intelligence so the individual could become expert in a selected intelligence domain over time, which supports the fact that CQ level could be enhanced for those who have been identified with low CQ level. This concept is been considered in the employee empowerment, line manager support, organisational behaviour, and environment readiness facets from this research conceptual framework in chapter five.

3.4.4. Triarchic Theory of Intelligence - Robert Sternberg (The Theory of Successful Intelligence)

Based on his new understanding of human intelligence, Sternberg (1985) defined intelligence as a “mental activity directed toward purposive adaptation to, selection and shaping of, real-world environments relevant to one's life”. According to Sternberg (1985), there are three main components of the working of minds. The first is meta-components, which is defined as the exclusive type of processes that involve managing our mind, controlling our actions, and used in decision making and problem-solving. The second component is the performance, which is defined as the type of processes that actions as directed by the metal components through performing tasks like perceiving problems, observing the relationship between two objects, and implementing relation to another arrangement of terms (Sternberg 1985). The third component is knowledge-acquisition that are related to selecting information from random information based on relevancy, and combining various pieces of selected information with learning from the newly collated information (Colangelo & Davis 1997). In general, these three process components are used in acquiring necessary information, while other tasks require other kinds of intelligence, as explained by Sternberg et al. (2001).

Sternberg in 1984 formulated a tripartite theory, namely the “Triarchic Theory of Intelligence” related to human intelligence that is considered the first theory that migrated from intelligence psychometric approach to cognitive approach. According to Sternberg (1984) definition, this theory consists of three meta sub-theories. The first sub-theory is called a “Practical – Contextual Intelligence” which as stated by Sternberg (1984) “relates intelligence to the external

world of the individual through three classes of the act: environmental adaptation, selection, and shaping”. The second sub-theory is called a “Componential – Analytical Intelligence” which as explained by Sternberg (1984) “relates intelligence to the individual's internal world specifies the mental mechanisms responsible for the learning, planning, execution, and evaluation of intelligent behavior”. The third sub-theory, according to Sternberg (1984), is Experiential – Creative Intelligence“ which relates intelligence to both the external and internal worlds through three kinds of information-processing components that are instrumental”. These components are “(a) learning how to do things, (b) planning what things to do and how to do them, and (c) actually doing the things” as stated by Sternberg (1984). This type of intelligence is more related to novelty and automation abilities to deal with new problems and situations. In this way, Sternberg has introduced a broader definition of intelligence than the g intelligence approach by adding the individual capacity to interact with environmental changes during the lifecycle.

Some scholars like Brody (2003) argued for the necessity of using the g theory to understand the relationships obtained by Sternberg et al. (2001) which shows disagreement with part of the Triarchic Theory. In the same context, the unempirical nature of the Triarchic Theory is not supporting its arguments that the traditional test of IQ is not in a position to measure the practical intelligence in an accurate way (Gottfredson 2003) that show a full disagreement with the Triarchic Theory. Also, some scholars like Gardner (1983) who argued on the fact that the Triarchic Theory does not provide competent evidence that this theory has sufficient departing from the conventional g theory. Even Sternberg has his own doubts about the Triarchic Theory as a whole correct and sufficient theory. However, the theory of successful intelligence provides a broader basis for

exploring human intelligence and serving intellectual leaders of the future rather than Spearman's theory of general intelligence that measure intelligence by traditional IQ tests (Sternberg 2005).

In conclusion, Sternberg believes that human intelligence is more connected to human life and environment with several types of abilities (memory, analytical, creative, practical...etc.) and should not be measured by traditional test that measures only academic achievements from a narrow point of view that leads to disadvantages many talented people and create Intelligent people but foolish (Sternberg 1998). Hence, individuals intelligence is connected to their life and environment, and traditional tests of intelligence are focusing on the academic side, which considers as a weakness in determining how would they perform with other especially from different cultural backgrounds. This theory also supports the development of CQ to focus on individual abilities to perform with others in formal and nonformal interactions.

All the mentioned theories in this section showed the need to have CQ quotient in order to deal with the individual performance as the focus were more into academic and emotional rather than performance in interaction situations that also include multicultural aspects. Based on that, CQ will be adopted in this research, and further investigations will take place to discover the links between CQ and innovation drivers along with the emergence of innovation outcomes in the public sector higher education service providers at the individual, group, organisational, and community levels.

3.5. Cultural Intelligence CQ Conceptualisation Models

According to Ott and Michailova (2016), there are two main conceptualisations of CQ were developed in the literature. The first CQ conceptualised model was developed by Earley and Ang (2003), and the second one was developed by Thomas et al. (2008). The following paragraphs present a further discussion of these two distinct CQ models:

3.5.1. Earley and Ang (2003) Conceptualisation Model

Building on Sternberg and Detterman's (1986) multiple loci of intelligence, Earley and Ang (2003) defined their CQ conceptualised model which is embraced by three facets (motivation, cognition-metacognition, and behavioural), linked them to diverse cultural settings, identifying specific functioning relevance to each facet. It is worthwhile to mention that the three facets developed by Earley and Ang (2003) became four by the action of Ang et al. (2006), and Ang et al. (2007) who divided the cognition facet into cognition and metacognition.

Motivational CQ drives the individual capabilities and attention to interact and to learn in a cross-cultural situation (Ng et al. 2012). Such motivational capacities will provide “agentic control of affect, cognition and behavior that facilitate goal accomplishment” as stated by Kanfer and Heggstad (1997). Based on the anticipations of the theory of motivation; Eccles and Wigfield (2002) concluded that the expectation of success and value of success are the main two components that could influence the energy direction and magnitude towards a specific task. Therefore,

Bandura (2002) indicated that a high motivational CQ would help those individuals to gain cross-cultural effectiveness and confidence to interact and direct their energy in multicultural situations.

Cognitive CQ as stated by Ng et al. (2012) “reflects knowledge of norms, practices, and conventions in different cultures acquired from education and personal experiences”, which is somehow similar to the definition of traditional intelligence. Individual cognitive knowledge includes the knowledge of the multicultural interpersonal system of interacting; this is in addition to the knowledge of legislation, sociolinguistics, and economic (Triandis 1994), and the knowledge of fundamental cultural values paradigms (Hofstede 2001). Brislin et al. (2006) argued that those individuals with high cognitive CQ have a better understanding of cross-cultural differences and similarities.

Metacognition CQ is higher-order cognitive processes that reflect the individual mental process that emerges to obtain cultural knowledge, also, to understand how these processes in the cultural context would control over individual thought processes (Flavell 1979). This definition was extended to groups and communities by Ng et al. (2012) when defined the Metacognition CQ capabilities as “planning, monitoring, and revising mental models of cultural norms for countries or groups of people”. As a result of having high motivational CQ, Triandis (2006) argued that individuals with such qualities have the capabilities to adjust their mental model within and after the multicultural engagement, also, they are prepared for any multicultural interaction through possessing the knowledge of others preferences prior and within the interaction.

Finally, Behavioural CQ is the individual capabilities to effectively interact in a multicultural environment using appropriate verbal and non-verbal actions as been defined by Ang et al. (2006). This definition was based on the emphasis of Hall (1959) as within certain cultural values in a specific setting; the individual would exhibit adequate verbal and non-verbal actions if they complement it with the mental ability and motivation to understand the multicultural context. These qualities were outlined by Ng et al. (2012) as these capabilities should be associated with “a wide and flexible repertoire of behaviors”. As a result, individuals with high behavioural CQ possess the ability to interact in multicultural situations with adequate behaviour through appropriate using of facial expression, gestures, tone, and selected words during their verbal and nonverbal engagement. On the other hand, Ang et al. (2006) emphasised on the fact that all these four facets illustrate different types of capabilities as individuals and together are forming the construct of CQ, which provides the flexibility to have one integral CQ facet from other factors. .

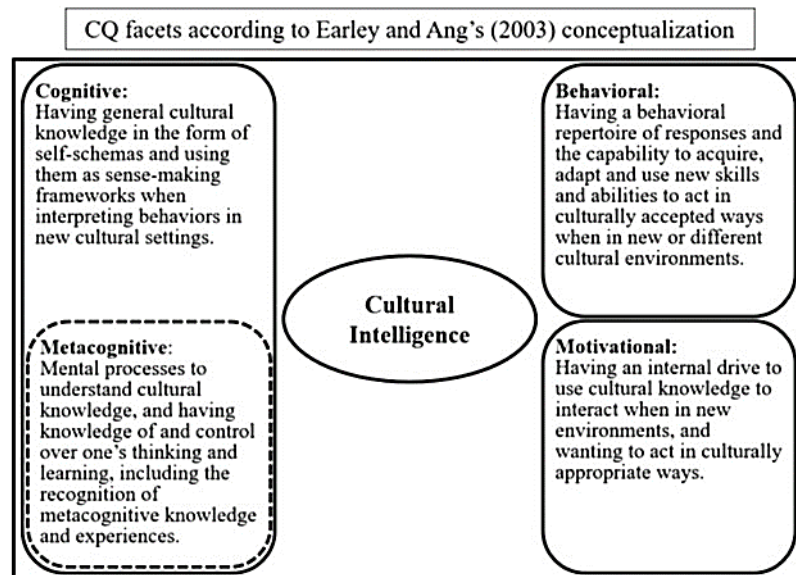


Figure (2) CQ Facets According to Earley and Ang (2003)

Adapted from Ott and Michailova (2016)

In summary, this conceptualisation will be initially adopted and further investigations will take place in chapter five to agree on the final CQ construct.

3.5.2. Thomas et al. (2008) CQ conceptualisation model

Drawing from the intelligence theories and through distinguishing CQ from social intelligence and emotional intelligence, and building on Earley and Ang's (2003) definition of CQ; Thomas et al. (2008) has introduced the second conceptualisation of CQ as “an interrelated construct consisting of knowledge, mindfulness and behavioural abilities that combine to result in effective interaction across cultures” as stated by Ott and Michailova (2016). CQ in Thomas et al. (2008) words is a “ system of interacting knowledge and skills, linked by cultural metacognition that allows people to adapt to, select, and shape the cultural aspects of their environment”.

Thomas et al. (2008) through building their CQ construct as intelligence rather than intercultural competency; they have segregated between intelligence as knowledge and skills and intelligence as behaviour that is based on the knowledge and skills (Solomon and Steyn 2017). Thomas et al. (2008) have differed studying the variation of the aspects of multicultural and focused on capturing these aspects similarities, which resulted in cultural intelligence behaviour that as based on the general cultural process and metacognition (Bücker, Furrer and Lin 2015). The conclusion of this concept modelling is to present CQ as a system of abilities where metacognitions

is playing an essential role at the CQ construct level that connecting its three facets with culturally intelligent behaviour (Ott and Michailova 2016).

Concerning Thomas et al. (2008) definition, CQ as a concept model is built on three main facets: Cultural Metacognition, Cultural Knowledge, and Cross-Cultural Skills. They have described cultural metacognition as a facet that includes: “processes to monitor and regulate conscious and deliberate thoughts, including cognitive self-regulation, abstraction of specific knowledge, the focus of cognitive resources, and compensatory effects”. They also added, “Cultural Knowledge, includes both culture-specific content knowledge about the values, beliefs and behaviors of other cultures, and the values and beliefs of the individual, and general procedural knowledge about the processes used to evaluate cultural differences, understand the effect of culture on behavior, solve problems, and the fundamental processes of cross-cultural interactions”. To provide more details on the required skills, Thomas et al. (2008) have provided three primary Cross-cultural skills as follows: “(1) perceptual skills about how an individual develops their perceptions of others and their behavior, and how they interpret the meaning of displayed behaviors”. “(2) relational skills about how an individual develops and maintains relationships with others”. “(3) adaptive skills about the abilities to adjust general approaches to social interaction to new situations”.

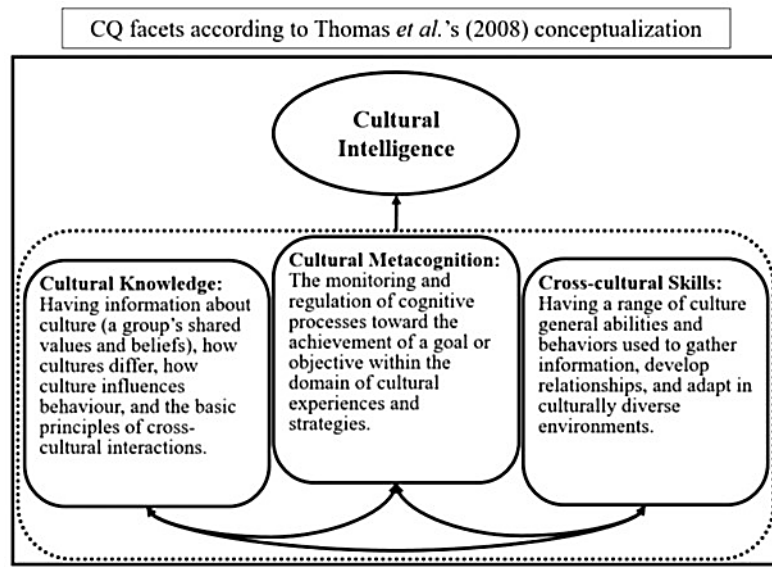


Figure (3) CQ Facets According to Thomas et al. (2008)

Adapted from Ott and Michailova (2016)

In summary, there are several CQ conceptualisations in the literature which indicate a level of disagreement to have a unique CQ conceptualisation where other forms could be developed from as a reference theory. This is due to the level of this concept newness that requires further investigation at the individual, group, organisation, and community levels.

3.6. Cultural Intelligence (CQ) Antecedents

From the conceptual models of Earley and Ang (2003) and Thomas et al. (2008), CQ as a theory could be constructed as knowledge within the multicultural context and from experience from multicultural interaction respectively in addition to educational interventions (Ott and Michailova 2016). Based on these conceptualisations, scholars like Ng and Early (2006) have developed a model to predict the CQ antecedents at the level of personality traits drawn from, and

Costa and McCare (2006) discussed extending the model to accommodate situational, team and organisational levels. However, the last three areas (situation, team and organisation) still require more investigations as argued by Ng et al. (2012). Hence, the CQ investigation in this research is going to focus on three main categories that summarise the CQ antecedents related to international experience, individual differences, and training and education at the individual, group, organisation, and community levels as provided in the following points.

3.6.1. International Experience and Cultural Exposure

Individuals exposure to a multicultural working or non-working environments might participate in increasing their CQ level. According to Ang and Van Dyne (2008), CQ is a set of capabilities that could be developed and shaped through international cultural exposure. There is a debate on which type of work or non-work experience could predict CQ better than the other. Also, debate extends to which extent education and duration of individual interaction in a multicultural environment would influence the CQ development. Some scholars like Crowne (2013) have shown that cognitive, metacognitive, and behavioural CQ could be predicted by work experience with several cultural, while non-work experience could predict cognitive and behavioural CQ. In the same context, other scholars like Moon et al. (2012), Sahin et al. (2014), and Engle and Crowne (2014) have demonstrated a positive correlation between international experiences with the development of the four CQ facets. Hence, exposing the individual to international experience might contribute to increase the cultural intelligence that leads to having individual better performance in such formal and nonformal settings.

On the other hand, some scholars did not find a significant relationship between international experiences and CQ facets development. For example, Varela and Gatlin-Watts (2014) showed merely cognitive and metacognitive with length experience could be predicted from the four CQ facets. In the same context, Wood and St. Peters (2014) stressed on the absence of the interaction with others from other cultures would negatively affect the development of the CQ behavioural facet. In response to these alterations, Eisenberg et al. (2013) argued on the necessity of international experience to develop the CQ after the completion of a cross-cultural management course, where the educational intervention was sufficient to develop the CQ without an international exposure to other cultures.

In conclusion, international exposure might and might not lead to a positive correlation that results in having a significant relationship with international experience and CQ development. Such ambiguity on the CQ facets development based on the international experience has led to inconsistent results. However, the CQ facets development rely on individual capabilities, educational interventions, and the work or non-work experience that differ from one to another. So, there is an argument on CQ influence as an external or internal factor that led to considering CQ effects as a moderator and as a mediator in this research conceptual framework in chapter five.

3.6.2. Individual Differences.

CQ levels for individuals are related to their personal capabilities, differences, and self-efficacy that influence the development of the CQ facets as summarised by Ott and Michailova (2016). To study the influence of the personal characteristics on CQ development; Ang et al. (2007)

have stated that openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism which are named by Big Five Personalities (five-factor model (FFM)) are related to the CQ development. They also added, individual with CQ utilise suitable capabilities in a multicultural environment based on the situation without affecting the stability of personality traits in general. According to Costa and McCare (2006) and Harrison (2012), the most and the only critical personal characteristics that significantly predict the CQ facets are creativity and imagination, openness to experience, and the tendency to be adventurous. In this perspective, Ang et al. (2007) have additionally demonstrated the CQ facets prediction via the personal characteristics as “Conscientiousness predicts metacognitive CQ, agreeableness predicts behavioral CQ and extraversion predicts motivational, behavioral and cognitive CQ”.

Bandura (2002), over the years, established the Self-efficacy Theory and continued exploring self-efficacy within Social Cognitive Theory in a cultural context. He defined the perceived personal self-efficacy in Bandura (1994) as “people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives”. He also added. “Self-efficacy beliefs determine how people feel, think, motivate themselves and behave”. Based on Bandura's outcomes, self-efficacy considered as antecedents of CQ and has been investigated by many scholars like MacNab and Worthely (2012) who have demonstrated that the individual general self-efficacy would influence CQ development. On the other hand, motivational and behavioural CQ facets development were significantly enhanced by providing training to individuals that led to improving task-specific and self-efficacy as concluded by Rehman et al. (2012).

In conclusion, Individual Big Five Personal Characteristics and Self-efficacy (general or task-specific) are predicting the CQ to a certain extent. However, individual capabilities differ from

one to another and directly are influencing the individual CQ development. As individual differences influence on CQ development been discussed in this part, the influence of the individual training and educational intervention will be discussed in the next point.

3.6.3. Cross-Cultural Training and Education

According to Kanter (1995), an organisation within the global economy requires a unique type of managers who have the capabilities to operate in more profound cross-cultural differences. In the same context, Early and Ang (2003) have noticed this gap, and accordingly, they proposed a set of individual capabilities and relevant competency like mental, behavioural, and motivational to overcome the cross-cultural challenges. To investigate the education interventions influence the development of the CQ facets, scholars have conducted structure training programmes in general on students. For example, MacNab et al. (2012) found that such experiential training programmes with contact component have shown significant improvement at all CQ facets and more noticeable improvement was found mainly in the metacognitive and behavioural facets. On the other hand, Fischer (2011) have shown that by excluding the contact components from the training programme, cognitive and metacognitive for students were decreased, and there was no enhancement on their behavioural and motivational facets.

Usually, companies who are sending their employees to overseas assignments provide them with training on several items, including cultural constraints. There is a debate on how these programmes are affecting the development of the CQ facets for those employees. For example, Moon et al. (2012) shown that cross-cultural training length would influence only the CQ cognitive

facet, and all four CQ facets were positively influenced by the programme comprehensiveness. Reichard et al. (2015) agreed with this understanding and added that all CQ facets development would witness enhancement if the cross-cultural training includes a simulation of the targeted culture main aspects. In there study, Rosenblatt et al. (2013) found that individual cognitive and metacognitive were enhanced as an outcome of the training programme, while behavioural and motivational CQ facets require an international experience for individuals to have the opportunity to be exposed to the other countries cultural and result in improving these two CQ facets. Therefore, the most comprehensive approached to increase the CQ for individuals would be in the integration between the training programme and international experience that includes practising situations.

In summary, international experience and cultural exposure, individual differences, and cross-cultural training and education are considered the primary CQ antecedents. There is a level of disagreement on to which degree these antecedents affect the individual CQ level. Again, CQ is becoming to a situation to be either internal factor, external factor, or both. Further investigation of this concept will be presented in the next point.

3.7. Cultural Intelligence (CQ) Moderation and Mediation Effect.

Cultural Intelligence as a notion has a relatively new presence in the research since was introduced by Earley (2002) for the first time and requires more investigations on the role of CQ and its influence on individual performance in a multicultural environment (Ott and Michailova 2016). According to Elenkov and Manev (2009), when CQ is considered as a moderator; leadership

innovation adoption was increased based on higher levels of CQ that expatriates have demonstrated. Also, when considering CQ as a moderator, leadership impact on adjustment and performance will be relatively positive based on the expatriates higher levels of CQ (Lee et al. 2013). Thus higher levels of CQ as a moderator will improve innovation adoption and employees performance.

Some scholars like Ramsey et al. (2011) have used CQ as a moderator to study the relationship between Institutional Distance (ID) (regulatory, normative and cultural-cognitive), expatriates travelling, and job strain. According to Ramsey et al. (2011) findings “Results reveal that CQ partially moderates the relationship between ID and travel and job strain”. In other words, individuals are facing more challenges based on the distance between their culture and the country cultural they are working in as their challenges are positively related to their CQ. Ramsey et al. (2011) also added, “the fundamental assumption underlying this study on ID and CQ is that reducing travel and job strain will result in an increase in trip satisfaction and performance”. As a conclusion, more training in cross-cultural management programme is crucial for those who are working in environments different from their culture.

In the same context, many scholars like (Wu and Ang 2011) has concluded that organisational support is crucial for those who are facing low CQ where the relationship between supporting and employees adjustments moderations are negatively impacted by the expatriate's employees cognitive and metacognitive CQ facets. In this context, Wu and Ang (2011) concluded that “we found that expatriate supporting practices were positively related to adjustment as well as performance”. Wu and Ang (2011) have also demonstrated that “metacognitive and cognitive

cultural intelligence negatively moderated the links between expatriate supporting practices and adjustment, while motivational cultural intelligence had a positive moderating effect”. As a result, it is recommended for organisations who are hiring overseas employees use the CQ as a performance indicator to determine their CQ level and provide training and support for those who have lower CQ levels at the four facets to enhance their performance.

On the other hand, Cultural Intelligence exhibits a positive influence when acting as a mediator on the individual work experience, casual experience, cross-cultural training, and work adjustment as stated by Moon et al. (2012). Also, CQ is playing a significant role on innovative work behaviour caused by the multiculturalism effect even under controlling variables like age, education, and country of residence as concluded by Korzilius, Bückner and Beerlage (2017). They also added, “CQ enables people to reconcile their different cultural schemas and integrate multiple cultural identities, to function as a catalyst in this process”. Furthermore, Sri et al. (2012) proven that CQ has a mediation effect supported by the interaction with work adjustments that enhanced the prediction of job performance. Moreover, CQ mediated the relationships between previous intercultural contact effect along with the leadership under the international context (Kim and Va Dyne 2011). Nevertheless, CQ has a strong ability to predict multicultural leadership effectiveness (Musamali and Martin 2016), as CQ has a significant correlation with effective leadership (Rockstuhl et al. 2011). Finally, CQ has a mediation effect on both openness and extraversion that lead to encourage the individuals to excel in a multicultural working environment, especially abroad assignment (Remhof, Gunkel and Schlaegel 2014). Hence, the mediation effect on the individual cognitive, metacognitive, motivation and behavioural facets showing an influence on increasing the interlinks connections between the targeted variables in this research.

In conclusion, CQ has been found to play a significant role as a moderator and as a mediator of the relationships between Employee Performance, Adjustment, Job Strain, Innovation Adoption, Institutional Distance, Leadership Effectiveness, Innovative Work Behaviour, Job Performance, Organisational Behaviour, and Travel Strain. Given the few research studies found in this area, there is a potential to further the examination of CQ role in this research as a moderator and as a mediator to investigate its influences on the defined relationships. However, CQ notion and measurement will be adopted in this research as a moderator and as a mediator because of its natural connections to the employee empowerment and the expected outcomes of the emergence of innovation.

3.8. Cultural Intelligence CQ Outcomes

Most of the research in Cultural Intelligence has investigated the CQ as a construct and provided several models and tools to measure it. This section focuses on the CQ outcomes on the individual, group, organisational, and community levels. Also, the author will provide insights on CQ facets that influence the outcomes as an individual facet or at the full CQ facets dimension. The aim is to provide the information on CQ facets influence on each of the CQ outcome.

3.8.1. Adjustment and Adaptation

Overall cultural adjustment (general, interaction, and work) has a direct and positive relationship with overall CQ high level. However, Chen et al. (2014) indicated that this

achievement is more related to general and interaction adjustment rather than work adjustment. Similar results were concluded by many scholars who found a negative relationship between one or more CQ facet and the work adjustment within the multicultural environment as concluded by Lee et al. (2014). Most of the scholars suggested several solutions to overcome this challenge; for example, Chen (2015) argued that well-received intercultural training might enhance the relationship between CQ and work adjustment. For furthering the investigations, scholars like Huff et al. (2014) have examined each CQ facet along with one adjustment type and in general, and found positive and significant relationships.

For adaptation, motivational and behavioural were found the only two CQ facets that predict the cultural adaptation (Ang et al. 2007). Also, Ward et al. (2011) added in this context that high levels of both metacognitive and motivational CQ facets resulted in enhanced cultural adaptations with minimal challenges. Furthermore, effective cultural adaptation depends on the individual capabilities to adjust to multicultural situations (Ng and Earley 2006). However, the crucial question is which facet is the most important one that contributes to adapting to new cultural settings? (Alon and Higgins 2005). Before answering this question, a multicultural setting is required in order to provide an international exposure that allows individual “learn to select and apply the appropriate tools, adapting them when necessary” as argued by Johnson et al. (2006). By having the right setting, motivational facet as approved by many scholars like (Huff et al. 2014) is playing a significant role in the expatriates overall success in adjustment and adaptation.

In conclusion, adjustment and adaptation to a cross-cultural environment are the most important outcomes of the CQ that facilitate the success of expatriates in their overseas jobs. To

overcome the adjustment and adaptation challenges; structured and ongoing training on intercultural understanding and engagement in addition to the international exposure would increase the CQ levels. Also, the motivational CQ is the crucial factor that can predict the adjustment types (general, interaction, and work) and support the individual adaptation to multicultural challenges. However, individual capabilities, education, and experience would expedite, delay, or fail the adjustment and adaptation.

3.8.2. Performance and Effectiveness

Most of the scholars found that individuals need to have a successful adjustment in a cross-cultural working environment in order to enhance performance and effectiveness (Lee et al. 2014). In the same context, CQ positive influence on adjustment and adaptation would lead to having a significant positive influence on the performance and educational effectiveness, as explained by Jyoti and Kour (2015). Thus, adjustment and adaptation come in the first place for individuals on the way to excel in a cross-cultural environment. Also, individual adjustment and adaptation will influence their capabilities in performing and being cultural effective.

When individuals have a level of satisfaction in adjustment and adaptation, the overall CQ, in general, would have a positive and significant relationship with both cross-cultural effectiveness and job performance (Lee et al. 2013). In the same context, when considering an overall CQ, scholars like (Bucker et al. 2014) found a positive and significant relationship between communication effectiveness and CQ four facets. On the other hand, Chen et al. (2010) studied the influence of each CQ facet and found that motivational CQ, along with work adjustment, has a

positive relationship on job performance. Also, metacognitive and behavioural CQ predict task performance, as concluded by (Ang et al. 2007). In addition, motivational and behavioural CQ indirectly increase task performance, as indicated by Malek and Budhwar (2013).

In conclusion, individual performance and effectiveness depend on CQ outcomes that require enhanced individual adjustment and adaptation in order to perform efficiently in a cross-cultural environment. Also, all factors that affect individual's adjustment and adaptation would have a direct and indirect influence on the individual performance and effectiveness, which require being taken into consideration in the individual preparations to work in a multicultural environment.

3.8.3. Cross-Cultural Leadership

Global managers as stated by Bird and Mendenhall (2016) need to exercise more exceptional leadership because they are “tasked with developing and implementing a corporate vision, building organisational culture, fostering diverse stakeholder relations and leading significant change efforts”. For better multicultural organisations management, Hudea (2014) has discussed the positive diversity influence on the organisation and how the positive leader attitude encourages the employees to adopt a similar attitude. Through Hudea's conceptual model, the outcomes of the positive cross-cultural leadership were innovation, performance, competitive advantage and reputation. Scholars like Snaebjornsson et al. (2015) argued that leader gender in a specific value of a particular cultural might affect their management style as “in some cases, women are not as successful as men, for example, when they adopt a masculine leadership style”. Therefore, it is essential to take into consideration the organisational and cultural expectations and barriers to

facilitate the leaders their mission in managing short and long-term goals in a multicultural working environment.

The cultural expectations from the leader who are working in a cross-cultural environment and how they should behave have a direct influence on the leader conduct and success (Dorfman et al. 2012). The influence of the culture would generate social challenges that require the leaders to have specific abilities to overcome and function within a cross-cultural environment (Rockstuhl et al. 2011). They have shown the leadership abilities to work efficiently in a multicultural work environment through having higher CQ in general “as the strongest predictor of cross-border leadership”. By defining CQ as “core cross-cultural leadership competence (personal, social, and cross-cultural”. Deng and Gibson (2009) have concluded through their model that leaders can improve their effectiveness by increasing their CQ in general and more specifically in cognitive and behavioural intelligence.

In summary, adjustment and adaptation, performance and effectiveness, cross-cultural leadership are considered as the primary CQ outcomes. These qualities are important to be considered as part of the individual, group, organisation, and community to enhance the performance through the cross-sectional interactions at all levels. CQ will be utilised in this research as a moderator and mediator to influence the relation between innovation drivers and the emergence of innovation outcomes in the public sector higher education service providers.

3.9. Summary of the Theoretical Background for Cultural Intelligence

High CQ level might enhance the leadership style of those managers who are working in a multicultural working environment and make them more efficient and successful. Also, cultural expectations and aspects might form a challenge for those leaders who thrive on working effectively and looking for functioning their role in such settings. Furthermore, individual behavioural style is playing a significant role in their management style, and how they can have the right attitude to encourages the employees performing their tasks better. In general, it has been approved that structured training programmes and education intervention would increase CQ levels, which result in having better abilities to lead and excel in a multicultural environment, facilitate innovation adoption, performance enhancement, better competitive advantage, and organisational reputation.

An individual with high CQ has better chances of generating and adopting innovation within a group, organisational, and community context as employees are living and influence by the national and international cultural admixture. Also, employees with high CQ showed better behavioural and motivational leadership style that results in having better teamwork performance. Furthermore, for a world with an open economy that is influenced with continuous globalisation transformation, individuals with high CQ will support their organisations to build and maintain partnerships and relationships with multicultural organisations and make their organisations thrives within the competitive market. As public sector play a significant role in developing the economy and response to the needs of the citizen and expats from several nationalities, high CQ will add value for the public sector employees to understand the cross-cultural needs for the internal and

external environments in the way to develop the suitable solutions. Hence, CQ will influence the public sector leadership and management style at the individual, group, organisational, and community levels to become more open to generate and adopt an innovation. Below Figure (4) provides a summary of this main chapter findings. More details about the adopted CQ model will be presented in chapter five research conceptual framework.

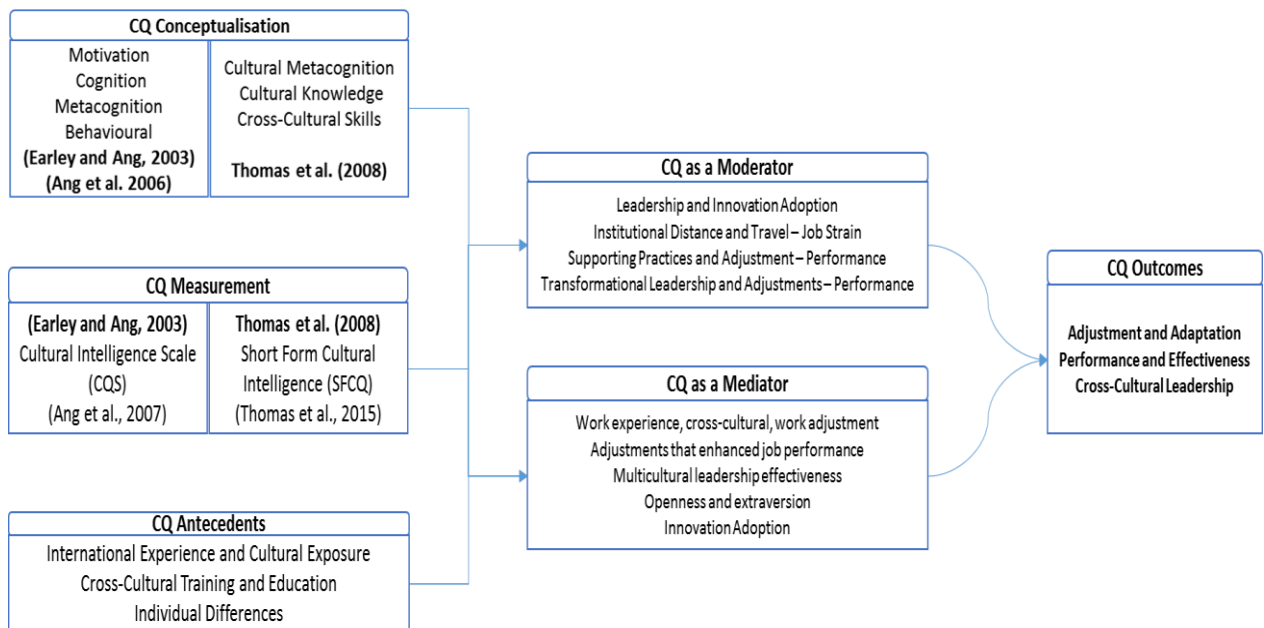


Figure (4) Summary of CQ Chapter

4. CHAPTER FOUR: THEORETICAL BACKGROUND EMERGENCE OF INNOVATION

4.1. Introduction

This chapter is the last part of this research Theoretical Background. Guided by the research problem statement, questions, aim and objectives, and hypotheses; the literature review in this chapter has been structured to present each focus area in depth and width in order to discover and identify the potential knowledge gaps related to this research in addition to comprehensively respond to the research questions. Also, a process of funnelling the results took place to identify the third central notion (Emergence of Innovation) characters and distinguishing features. Furthermore, this notion has been presented through definition, theoretical background, related theories, and conceptual growth over time. Moreover, this central notion was interlinked with the other two notions when applicable through the identified interactions and connections. Finally, such an intensive process has led to develop the proposed research conceptual framework carefully and to develop suitable methodologies to measure it.

4.2. The Emergence of Innovation.

In this section, innovation will be introduced in general and in the public organisation context. Then, the emergence of innovation will be presented as phenomena that should be adopted by the public sector in order to generate successful innovation. This exceptional notion is considered as a unique contribution to the body of knowledge by introducing this concept in the

public sector context, especially when connected with individual empowerment with high CQ capabilities. More details on innovation within the public sector will be provided in the upcoming pages.

4.3. Innovation Definition

The construct of innovation evolved as the ability to develop and execute new idea at several levels: individual, group, or organisation (Drucker 1999) in addition to innovation intensity (Hollenstein 1996). At the individual level, Hero et al. (2017) argued that a competent individual should possess the required personal characteristics such as knowledge, abilities, and the right attitude to create and implement novel ideas and solutions through an innovative process. Hero et al. (2017) also added that “personal characteristics, such as flexibility, achievement orientation, motivation and engagement, self-esteem and self-management, future orientation, creative thinking skills, social skills, project management skills, and content knowledge and making skills” would play a significant role in individual innovation capabilities. This definition is providing the individual intellectual capabilities, competencies, and behaviour to innovate using the right skills in the right innovation environment.

For innovation at the group level, scholars like Aulawi et al. (2009) found that teamwork (senior management and employees) would support individual to develop their knowledge creation that results in creating novel ideas and find the way to transform them into processes and implementations. On the other hand, innovation at an organisational level requires organisations to

“dispose of the necessary resources, a strong motivation to innovate and an organizational climate that allows and encourages the emergence of innovative ideas” as stated by Popa et al. (2010). Organisational innovativeness relies on the capacities of the organisation and its employee to adopt innovation and perceive related risks with minimal resistance (Townsend 2013). Finally, with exploratory influence, Evans (1991) defined innovation as “the ability to discover new relationships, of seeing things from new perspectives and to form new combinations of existing concepts”. Hence, innovation at group level along with organisation resource allocation and through the right environment would support the emergence of innovation where individuals via teamwork generate new ideas all the way through developing them to process and implementations.

The definition of innovation in the literature varies between individual, group, and organisational references. Scholars have intensively studied individual innovativeness, organisational innovativeness, and both individual and organisational as reciprocal innovation influences. For example, Schumpeter (1930) as cited in Popa et al. (2010) defined innovation as “Introducing a new product or modifications brought to an existing product”. Schumpeter (1930) also added that innovation is “a new process of innovation in an industry”, and “The discovery of a new market”. Furthermore, Schumpeter extended the definition of innovation to “developing new sources of supply with raw materials” and “other changes in the organization”. Other scholars like Howard and Sheth (1969) considered innovation as the new product that is consumed by buyers regardless of its newness to the organisation. With more focus on the concept of newness, Mohr (1969) argued that innovation is related to the level of new particular changes and how they would be implemented in an organisation.

In the eighties and onward, the definition of innovation evolved to become a “broad utility concept defined in various ways to reflect a specific requirement and characteristic of a particular study” as stated by Damanpour and Evan (1984). More into an organisational context, innovation as a creative process was defined by Simmonds (1986) as “new ideas that consist of: new products and services, new use of existing products, new markets for existing products or new marketing methods”. In the same context, Damanpour (1991) extended the definition of innovation to a firm-level as the organisational generation and adoption of new ideas. Some scholars have narrowed the definition of innovation to task level like Davenport (1993) who considered innovation as a radical and new way to achieve a particular task.

Between process, product, marketing and value, innovation was defined by Lumpkin and Dess (1996) as “ a process that provides added value and a degree of novelty to the organization, suppliers and customers, developing new procedures, solutions, products and services and new ways of marketing”. In the same context, Nohria and Gulati (1996) extended the definition to organisational policy and procedures as “any policy, structure, method, process, product or market opportunity that the manager of a working business unit should perceive as new”. Rogers (2003) added a unique definition to innovation through knowledge level as innovation “involves both knowledge creation and diffusion of existing knowledge”. Finally, some scholars added the technological part into innovation like Boer and During (2001) who defined innovation as “Creating a new association (combination) product market-technology-organization”. Therefore, Innovation definition depends on the newness and novelty of an idea at the individual and organisational level and the newness of the implementation of this at the individual, group, organisational, technological, and market levels.

4.4. Creativity and Innovation Within the Organisational Context

Creativity as a concept has been directed by many scholars like West and Farr (1996) as “a novel and useful ideas” generation, while the production of these new ideas and their implementation is argued to be defined as the innovation (Zhou and Shalley 2008). Creativity could be assessed based on the terms of novelty and radicalness, and innovation would be following the assessment but not in general as there are many situations that innovation is following less novelty along with more incremental changes (Zaltman et al. 1973). Also, creativity includes a particular type of process that is related to primarily intra-individual cognitive, while innovation process mainly relays on inter-individual social in the workplace (Rank et al. 2004).

Concerning the literature, the relation between creativity and innovation at the organisational level was and still under investigations as emergent multi-level phenomena. There are debates on defining creativity and innovation as separated concepts or integrated process. However, the more agreeable understanding is that creativity and innovation is a cycle process from idea generation all the way through product development and implementation (Paulus 2002). As a general conclusion, creativity is forming the first step in each development cycle, and innovation is considered as the process for ideas production and implementation.

Anderson et al. (2014) described the creativity and innovation at work as “the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things”. Anderson et al. (2014) also added, “Creativity and innovation can occur at the level of the individual, work team, organization, or at more than one of these levels combined, but will

invariably result in identifiable benefits at one or more of these levels-of-analysis”. This definition is providing an integrative definition of creativity and innovation within an organisation that consider them as part of its strategy and not as a matter of coincidence.

Employees engagement in innovation depends on their intentions to develop and implement new ideas, methods, or practice in a particular organisation (West and Farr 1996). However, to keep the competitive advantage in the market, organisations should consider new ideas from the employees and harness to their creativity and innovation process for production and implementation (West 2002). It is worth to mention that the company employees might generate innovative ideas (Janssen 2000) or might learn these new ideas from employees outside the organisation (Zhou and Shalley 2010). Hence, employee empowerment is considered crucial to “increase the demand and efforts to create innovation by authorizing employees and increasing their competence” as stated by Uzunbacak (2015). He also added “giving employees’ enough time, education and resource makes a positive impact on the perception of employees’ self-sufficiency, work satisfaction, confidence and the meaningfulness of work”. Based on this type of empowerment, Kahreh et al. (2011) concluded that “employees with this perception feel themselves more empowered, increase their efficiency and productivity within the organization, and become the source of new ideas and innovation”.

In summary, creativity is considered a novel idea while innovation is the process to transform such an idea to produce, service, or process. Here, the relation between innovation and empowerment in organisational context were explained as there is a need at to compete in the market at organisational, and at the same time, new ideas generation and implementation depends

on their employees and to which extent they are empowered. Such a conclusion will be utilised in this research conceptual framework to connect the innovation drivers with the emergence of innovation outcomes in the public sector.

4.5. Theories That are Based on Creativity and Innovation

In this research, the relations between creativity and innovation in an organisational establishment were explored. This section introduces eight major theoretical perspectives and models that are related to creativity, innovation, and both construct.

4.5.1. Componential Theory of Organisation Creativity and Innovation

Motivation is considered as one of the most critical features that driving creativity in the workplace, as concluded from the study of Gardner (1993) for the seven creative geniuses in the twentieth century. Amabile (1997) described motivation as a necessary ingredient for creativity evolvement for the remarkable and ordinal people in their work as “creative thinking requires the presistence and intensity that arises from strong motivation”. Herzberg (1966) through the Motivator-Hygiene Theory has divided the motivation into two main factors, first the “Motivator” factor that is related to the work and employees relation that include: responsible work, autonomy, satisfaction based on challenging work accomplishment. The second factor is the “Hygiene” factor that is related to the surrounding environment and context that include: pay, security, and general work conditions. In their model of job enrichment, Hackman and Oldham (1976) suggested to

making the job more motivational as organisations need to increase “skill variety, task identity, task significance, autonomy, and feedback” in order to create the right environment for creative ideas development and implementation.

By taking into consideration, the theories mentioned above in addition to the conclusions, Amabile (1997) developed her Componential Theory of Organisation Creativity and Innovation, where work environment impact specific components which influence the creativity that is considered the innovation source for organisations. She has concluded three main components influencing the creativity in the organisations at both levels individual or small team; they are “expertise, creative-thinking skill, and intrinsic motivation” as stated by Amabile (1997). For motivation, there are two main types as indicated by Amabile (1997), the first one is intrinsically motivation when people “seek enjoyment, interest, the satisfaction of curiosity, self-expression, or personal challenge in work”. The second type of motivation, as stated by Amabile (1997), is extrinsically motivation when people “engage in the work in order to obtain some goal that is apart from work itself”.

On a broader point of view, (Amabile 1997) noted that organisational motivation to innovate, allocated resources, and managerial practice are directly influencing employees creativity. More particular, Amabile and Conti (1999) described the work environment components that are influencing employees creativity via organisational motivation to innovate through allocated finance, time, and personal resources in addition to management encouragement and enabling challenging work. Based on the complexity of human motivation, Amabile (1997) advised organisational management that seeks creativity to include motivation management education,

motivation sources, motivation influence on the organisation and employee performance, and motivation influence in general.

In conclusion, this model for creativity has received “empirical support regarding the role of its motivation component as a psychological mechanism underlying influences from the work environment on employees’ creativity” as stated by Anderson (2014). However, according to Zhou and Shalley (2010), the expertise and creative-thinking skill did not receive empirical support and their influence on the organisation or individual creativity comparing with the empirical support received by the motivational component. Hence, motivation is playing a significant role in empowering the employee to develop and implement creative ideas. To empower employees, organisations should think of job enrichment, resource allocation, a working environment that encourages innovation, employee autonomy, satisfaction, feedback, and rewards. All these components will be considered in interlinking the factors of innovation drivers and the emergence of innovation outcomes.

4.5.2. Interactionist Perspective of Organisational Creativity

Based on the “interactionist model of creative behavior” developed by Woodman and Schoenfeldt (1989), and from the understanding of organisational creativity, creative behaviour, and organisational innovation in a sophisticated setting, Woodman et al. (1993) defined the organisational creativity as “the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system”. Also, Woodman et al. (1993) have developed a theoretical interactional framework for organisational creativity through

framing the definition of creativity as “a subset of the broader domain of innovation. Based on that, innovation is then characterized to be a subset of an even broader construct of organizational change” that might or might not include innovation. Derived from Amabile (1988) definition of organisational creativity that may produce “new product, service, idea, or process that is implemented through innovation”; Woodman et al. (1993) concluded that “innovation can also include the adaptation of preexisting products or processes, or those created outside of the organization”. In this way, they have shown the complexity of organisational creativity as a novelty and distinguished it from the innovation in an organisational and social context. Please see the below Figure(5):

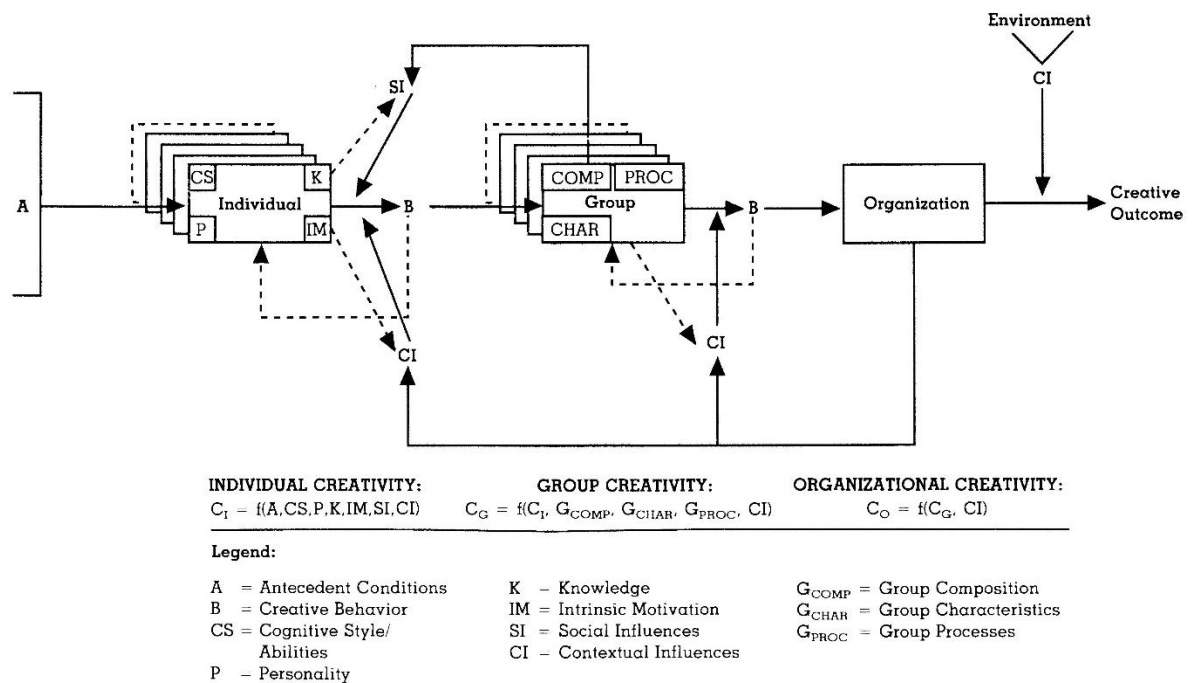


Figure (5) “An interactionist Model of Organisational Creativity” Woodman et al. (1993)

Woodman et al. (1993) have described three levels of organisational creativity at individual, team, and organisation. At the individual level, they have described the creativity as a resulted from the “antecedents conditions (biographical variables), cognitive abilities and style, personality, relevant knowledge, motivation, social influences, and contextual influences”. Creativity at the team level was described by Woodman et al. (1993) as “a function of individual creative behavior "inputs," the interaction of the individuals involved, group characteristics, group processes, and contextual”. Finally, creativity at an organisational level as stated by Woodman et al. (1993) “is a function of the creative outputs of its component groups and contextual influences (organizational culture, reward systems, resource constraints, the larger environment outside the system, and so on”. Woodman et al. (1993) have argued that “ the gestalt of creative output (new products, services, ideas, procedures, and processes) for the entire system stems from the complex mosaic of individual, group, and organizational characteristics and behaviors occurring within the salient situational influences (both creativity constraining and enhancing) existing at each level of social organization”.

In conclusion, it is worth to mention that this model of organisational creativity is one of the most conceptual frameworks that are used in “emphasizing the interactions between the contextual and individual factors that might enhance or inhibit creativity at work” as stated by many scholars like Shalley et al. (2009). This model will be utilised in establishing the relationships between the proposed three research notions (employee empowerment, cultural intelligence, and the emergence of innovation in the public sector as part of constructing the research conceptual framework.

4.5.3. Theory of Individual Creative Action

Ford (1996) stated, “creative and habitual actions represent competing behavioral options that may be simultaneously influenced by multiple domains of social action”. By integrating the creativity description from psychological and sociological perspectives; Ford (1996) presented “theory of individual creative action within organizational settings composed of intertwined group, organizational, institutional and market domains”. Ford (1996) also added, “this theory contributes to the innovation literature by illustrating how intentional action and evolutionary processes that legitimize action interact to facilitate creativity and innovation”. In this definition, Ford described the creativity within an organisational setting as an individual choice to be creative or to perform routine actions.

The main contributions of this model as argued by Ford (1996) is “describing interactions between intentional and evolutionary change processes as a mean for integrating psychological and sociological approaches to explaining creative and conformist behavior”. Ford (1996) added the second contribution through “arguing that creative actions will be forsaken, regardless of the favorable conditions, as long as habitual actions remain more attractive”. Ford (1996) concluded his contributions by the following third point through “identifying multiple social domains that collectively represent "the situation facing organizational actors as they choose between creative and routine actions”.

Based on this model, Ford introduced three groups of factors that have a direct influence on an employee decision to be creative or to do habitual actions: “sensemaking, motivation, and

knowledge and ability” as concluded by Ford (1996). These three groups as an integrated domain are influencing the individual creative action, and any lack of these factors would negatively impact individual engagement in a creative action (Ford, 1996). For the sense-making process, Ford (1996) argued that these factors are guiding individuals to elicits the appropriate intentions and expectations to attempt creative or habitual actions in a future context. Individual motivation factors that influence the decision on creative or habitual actions are determined by “goals, receptivity beliefs, capability beliefs, and emotions” as argued by Ford (1996). Finally, individual knowledge and ability in deciding on creative or habitual action are based on the composition of sensemaking and motivation, these group of factors determined by “Domain-related Knowledge, Behavioral abilities, and Creative-thinking abilities” as stated by Ford (1996).

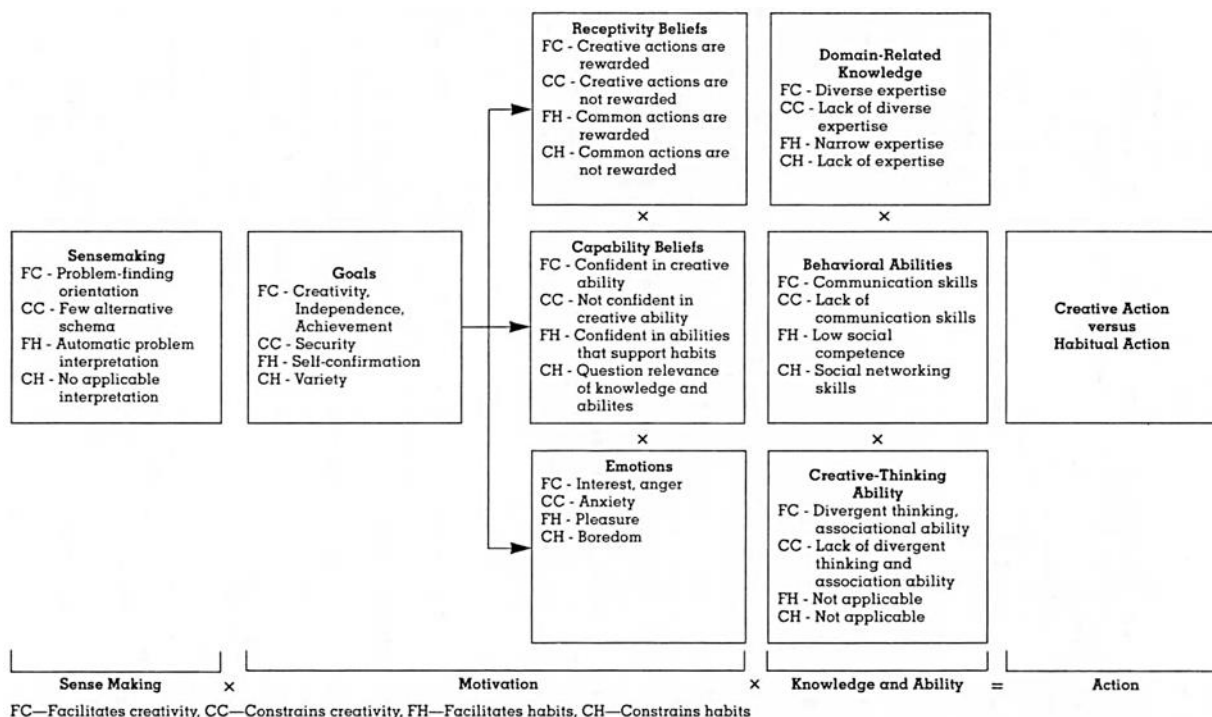


Figure (6) Theory of Individual Creative Action by Ford (1996)

In summary, some portions of this model have received empirical support by some scholars (Unsworth and Clegg 2010). However, due to the model complexity and the challenge to test it as a whole were behind not to get high scholars attraction like other models in the same field (Janssen 2005). Hence, sensemaking, motivation, and knowledge and ability are the three main factors that influence the individual ability to be creative. These factors will be brought to innovation drivers to support the emergence of innovation in the public sector higher education services provider.

4.5.4. Theorizing on Cultural Differences and Creativity

In an open market, international business and connected economies, there is a debate on cultural differences and their influence on creativity (Zhou and Su 2010). The rapid globalisation resulted in interlinking the whole world, which forced managers from several levels to engage with their peers from multicultural backgrounds (Chandan 2015). In response to these challenges; Kanter (1995) suggested to have a new breed of managers with multicultural capabilities to function in a multicultural environment should be developed to maintain the company competition in this global economy. To understand these abilities for the new category of managers; there is a need to establish a different notion of intelligence that should target the individual capability to provide solutions for cross-cultural challenges (Ng et al. 2012). The significant gap in cultural differences and creativity grabbed the attention for more research in this critical area (Anderson et al. 2004). The research should not only be about cultural differences that influence creativity, but it should also cover the cultural similarities that would impact creativity as stressed by Morris and Leung (2010).

According to Erez and Nouri (2010), the focus of theorising the cultural difference that influences the individual creativity came through the task and social context moderation on the relationship between creativity and individual cultural values. Also, the focus was on culture influence and moderation on the creativity of leaders, line managers, colleagues, and social network (Zhou and Su 2010). Therefore, there is a need to know how the assessments of creativity would be impacted by cultural differences as concluded by Hempel and Sue-Chan (2010). In the same context, Chiu and Kwan (2010) raised a question on how the entire creative process would be influenced by cultural differences?.

From organisational and group perspective, Zhou (2006) has developed the first multi-level model of Paternalistic Organizational Control and Group Creativity taking into consideration the paternalistic leadership, self-system theory, and the impact on intrinsic motivation. Based on this model, Zhou (2006) provided three main contributions starting with “paternalistic organizational control enhances work group creativity for groups in the East”. The second Zhou (2006) contribution is “the impact of paternalistic organizational control on group creativity is mediated by groups’ intrinsic motivation”. The final contribution for Zhou (2006) is “national culture moderates the relationship between organizational control and group intrinsic motivation” which leads to “organizational control would enhance intrinsic motivation (and creativity) for groups in the East, but it would inhibit intrinsic motivation (and creativity) for groups in the West”.

Zhou (2006) model has conceptualised “how different forms of paternalistic control at the organizational level of analysis may impinge upon creativity produced by teams embedded in the organizations” as stated by Adrenson et al. (2014). They also added, “In this model, paternalistic

organizational control is theorized as the level of control exerted by top management over personnel and task-related decisions within work teams”. Zhou (2006) conclusions show cultural differences influence the intrinsic motivation that is considered by many scholars like Woodman et al. (1993), Ford (1996), Amabile (1997), (Zhou and Shalley 2010), and (Hero et al. 2017) is one of the leading factors that directly influence creativity. This control as argued by Zhou (2006) would have an impact on the team intrinsic motivation that influence the team creativity based on the cultural differences as a motivation foster for East teams and motivation inhabitation for teams from West.

In conclusion, there was attention and empirical support to a conceptual work based on Zhou (2006) model by adopting the positive influence of the cultural diversity that promotes the divergence in the team that leads to creativity within organisation setting as explained by Stahl et al. (2009). However, even though Zhou (2006) model is one of the first multi-level approaches in the organisational science literature to investigate the influence of cultural difference on organisational control and its impact on team creativity. There were rare empirical examinations to this model due to the fact that this model requires data collection from large audiences in good organisations from both Eastern and Western countries (Anderson et al. 2014). This conclusion shows the need to have CQ at the individual, group, organisation, and community levels as cultural difference might foster or inhibit motivation that is considered as a core for employee empowerment and innovation adoption.

4.5.5. Four Factor Theory of Team Climate for Innovation

From the quantity and quality innovation psychological constructs; West (1990) has introduced his four-facets group innovation model to predict the innovation within an organisational setting. According to West (1990); these four facets of group innovation are “vision, participative safety, climate for excellence, and norms of and support for innovation”. He also proposed that “two of the constructs will relate principally to the quantity of innovation and two to the quality of innovation”. In more details, norms of innovation and participative safety are the group of processes that are proposed to increase the quantity of introducing new ideas (innovations) through encouraging inventors to generate the required social reinforcement contingencies (West 1990). Also, quality vision and concerns were proposed by West (1990) to be “more task or product oriented and are therefore more likely to affect the significance and quality of the innovation product the kind of innovations”.

Anderson and West (1998) provided more insights into these four-facets of group innovation through the following four conclusions as conditions to enhance group innovation in an organisational setting. First, to have enhanced team innovation, the organisation should make its vision clear and understandable for the innovation team in addition to innovation team acceptance of the organisational values. Second, the innovation team should be supported to generate new ideas and solutions without being subject to judgement and criticism. The third condition to enhance team innovation is when there is a debate on different proposed solutions, the innovation team should carefully examine it. The last condition which is considered crucial for innovation is

that an organisation should support the innovation team and allocate resources as appropriate to facilitate innovation through the establishment of shared climates.

In conclusion, this theory witnessed wide utilisations in many research areas related to team innovation in the organisational context, and recently it received support at primary and meta-analysis students as concluded by (Hulsheger et al. 2009). This theory will be utilised in developing the board of innovation provision as one of the facets of this research conceptual framework in chapter five.

4.5.6. Ambidexterity Theory

Bledow et al. (2009) explored individual, group, and organisational innovation knowledge and how innovation emerges through factors that facilitate innovation in addition to overcome the factors that inhibit innovation. First, they have proposed an integration of innovation knowledge to establish a ground for their theory. Then, as stated by Bledow et al. (2009), “we apply a dialectic perspective on innovation to overcome limitations of dichotomous reasoning and to gain a more valid account of innovation”. Then they have pointed out that “individuals, teams, and organizations need to self-regulate and manage conflicting demands of innovation and that multiple pathways can lead to idea generation and innovation”. Based on that, they have developed a framework “Ambidexterity Theory” as a guide for future research by extending the usage of organisational ambidexterity to individual and teams levels.

The focus in Bledow et al. (2009) framework is on “developing and testing principles of innovation management in addition to developing decision aids for organizational practice” rather than investigating how innovation emerges. Bledow et al. (2009) have defined Ambidexterity as “the ability of a complex and adaptive system to manage and meet conflicting demands by engaging in fundamentally different activities”. Also, they have used the construct of creativity as the development of useful new ideas and innovation as a construct that includes these creative new ideas and their implementations. Furthermore, they have distinguished between innovation and efficiency at an organisational level as “innovation involves creative thinking and exploratory, non-routine actions, whereas efficiency depends on routine, standardized processes giving rise to exploitation of skills and knowledge” as concluded by Papachroni et al. (2016). Finally, Ambidexterity Theory was inline and “consistent with recent calls for a dialectical perspective on innovation” as stated by Zacher and Rosing (2015).

The Ambidexterity Theory main aim is to facilitate successful innovation for organisations through the proposed process and principals for managing conflicts demands at multiple levels (Anderson et al. 2014). This framework represents successful management for exploration like new product creation and exploitation like products production and implementation (Bledow et al. 2009). Based on the innovation knowledge integration Bledow et al. (2009) emphasised on the need of using both the active management and self-regulatory processes for the integration the performed activities by sub-systems or at a different point in time. Finally, Bledow et al. (2009) concluded their research by proposing action principles for innovation management, they are “Principle of conflicting demands, Principle of antithesis, Principle of integrating variability, Principle of overcoming dichotomous thinking, Principle of separation, Principle of actively

managing dialectic tensions, Principle of proactivity, and Principle of dialogue between research and practice”.

In conclusion, Bledow et al. (2009) Ambidexterity Theory were somehow supported to a certain context by some scholars like (Zacher and Rosing 2015) and (Papachroni et al. 2016) who used major prospects from this theory. According to Rosing et al. (2011), this theory provides excellent potential for future studies related to innovation processes and leadership effectiveness, that is considered for future research agenda, while this research is focusing on how innovation emerges via business practices.

4.5.7. Diffusion of Innovations Theory

Diffusion of Innovations Theory is one of the most popular theories that is used widely as an innovation framework in many disciplines like “geography, education, marketing, public health, rural sociology, agricultural economics, general economics, political science, and others” as stated by Singhal and Dearing (2006). In 1962, Rogers published a refined, expanded, and enhanced literature chapter from his doctoral dissertation as the Diffusion of Innovation Book. Rogers (2003) defined innovation diffusion as “the process in which an innovation is communicated through certain channels over time among the members of a social system”. Also, he defined innovation as “an idea, practice, or project that is perceived as new by an individual or other unit of adoption”. Rogers aim was to investigate why innovation is adopted in early stages by some users while the others resist the adoption, and how to overcome these challenges.

According to Rogers (2003), innovation adoption is a consumer decision of “full use of an innovation as the best course of action available” or just a rejection decision of “not to adopt an innovation”. Based on Rogers definition of diffusion, there are four main components of diffusion of innovation theory “Innovation, Communication Channels, Time, and Social System”. Also, Rogers (2003) described the innovation-decision process as “an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation”. In summary, Rogers (2003) provided five main steps for the innovation-decision process: “Knowledge, persuasion, decision, implementation, and communication” following a time-ordered manner.

For Rogers, diffusion of innovation is a process that is described as “an uncertainty reduction process”, and proposed five characteristics of innovation to decrease the uncertainty. According to Rogers (2003), “individuals’ perceptions of these characteristics predict the rate of adoption of innovations”. These characteristics are “relative advantage, compatibility, complexity, trialability, and observability” as argued by Rogers (2003). He defined the rate of innovation adoption as “the relative speed with which an innovation is adopted by members of a social system”. He also added that this rate of adoption of the innovation is providing a measure that can predict the number of individuals who would adopt an innovation.

Rogers (2003) defined five main adopter categories for innovation based on the time speed of innovation adoption as “Innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system”. The first category is called “Innovators” and with a percentage of 2.5% from the normal distribution that

innovation adoption is following as described by (Rogers 2003). The second category is called “Early Adopters” who holds the lead in the social system and forms 13.5% from the distribution. The third category is called “Early Majority” who have an interpersonal network that influences the innovation diffusion process and forms 34% from the distribution. The fourth category is “Late Majority” who wait for this the innovation is well examined and recommended by their peer and forms 34% from the distribution. The last category is called “Laggards” who have a traditional perspective and take a long time to adopt. In general, Rogers (2003) provided two main groups for his five categories; early adopters and late adopters depends on the time that individual takes to adopt an innovation.

In conclusion, Everett M. Rogers Diffusion of Innovations Theory explained how, why, and what rate of technology and new ideas spread. Also, this theory was highly adopted by many scholars as we can find thousands of articles across many disciplines supported this theory with few adopted changes (Greenhalgh et al. 2005). However, some scholar advised that this theory of diffusion is saturated and no need for more research in the same context (Meyer 2004). Other scholars advised to migrate from the focus on individual innovation adoption and expanded the research to organisations, communities-of-practice, innovation technological consequences, indigenous wisdom and solutions, and the innovation culturally appropriateness (Singhal and Dearing 2006). This conclusion was one of the motives to bring the notion of cultural intelligence to this research at the levels of the individual, group, organisational, and community in the way to influence the emergence of innovation in the public sector.

4.5.8. Disruptive Innovation Theory

In 1995, Clayton Christensen introduced the term of Disruptive Innovation as a type of innovation that creates a new market and value network that disrupt and displacing products and established organisations (Bower and Christensen 1995). According to Christensen (1997), innovation is either sustaining or disruptive based on the innovation influence on the market. In Christensen (1997) words “Generally, disruptive innovations were technologically straightforward, consisting of off-the-shelf components put together in a product architecture that was often simpler than prior approaches”. Christensen (1997) also added, “They offered less of what customers in established markets wanted and so could rarely be initially employed there”. Christensen (1997) also added, “They offered a different package of attributes valued only in emerging markets remote from, and unimportant to, the mainstream”.

Innovation without a significant influence on the market is a sustaining innovation wither it is “Evolutionary” in improving products in the existing market to satisfy customers or “Revolutionary” that is unexpected but does not change the market (Christensen 1997). On the other hand, an innovation that generates new market through creating a new and unexpected product that overtakes the market is a disruptive innovation (Christensen 1997). According to Christensen (2003), the “low-end disruption” is a product improvement that exceeds the normal customer needs, maybe slower than the incumbent product, creating a new market, and targeting customers who do not need full performance and will be happy with the good enough product. He also added, “New-market disruption” is a kind of innovation that creates solutions for customers need that was not served by incumbents, which create an emerged market segment.

In summary, Clayton Christensen Disruptive Innovation Theory is one of the most used and cited theory in many fields, especially in the field of Business. However, in recent years, this theory was challenged as it has a methodology that relies on selected case studies as the principal evidence (Weeks 2015). He also pointed to three main questions to criticise the theory “a lack of an adequately constrained definition of the term disruptive innovation; a failure to identify and maintain a consistent unit of analysis in the research; and a failure to account adequately for managerial agency”. Finally, Christensen et al. (2017) said: “empirical management research on disruptive innovation has simply not kept pace”. Despite all criticism of this theory, currently many studies working on highlighting the gaps in this theory and suggest better ways for adoption. Hence there is a need to understand the market and customers in order to develop a suitable innovative solution. Enhancing product for the current market or creating a product for emerging markets requires a team of experts to support innovation generation and implementation. This conclusion also supports having the board of innovation provision as part of innovation human drivers to support the emergence of innovation in the public sector higher education services providers.

4.6. Public Sector Innovation

Most of the innovation research is in private sector and focuses on introducing new products or services to their customers, in addition, to open new markets for new innovative ideas. Innovation in the private sector has witnessed profound research more than the research that has been conducted relating to public sector innovation (Arundel, Bloch and Ferguson 2016). Also, innovation in the private sector is well-developed as a research area of study where innovation

generation and adoption as a norm at the organisational level is explained (Fagerberg et al. 2005). Furthermore, “guidelines for how to use surveys to measure innovative activities in the private sector have been available via the OECD’s Frascati Manual (2015) for R&D since the early 1960s and via the Oslo Manual for other innovation activities since 1992.” as stated by Arundel, Bloch and Ferguson (2016). Therefore, there is much research took place in private sector innovation, there is also a need to further the research in the public sector innovation from theoretical, multi-methods, cultural, and governance perspective as concluded by De Vries et al. (2016).

On the other hand, the research conducted within the private sector innovation has a significant difference from the public sector as stated by Wu et al. (2011) “Innovation in the public sector is different from that in the private sector and deserves in-depth examination”. When adopting the private sector innovation approaches, it is critical to make sure that such a process will be appropriately embedded within the public sector settings. Private and public innovation drivers and benefits are different, and forcing private sector innovation approaches might increase the failure of innovation in the public sector as stressed by Kay and Goldspink (2013). They also added, “private sector innovation models may be applicable to innovations developed and led internally in providing valuable lessons for the public sector”. In addition to that, Kay and Goldspink (2013) also concluded, “Private and public sectors have different standards for readiness of innovations for release and different benchmarks for success”. Hence, there is a potential to learn from private-sector innovation; however, such innovation approach from the private sector should fall into the public sector context in addition to the needs as appropriate in the way to be accepted and adopted in the public sector context.

As argued by many scholars and practitioners (Osborne and Brown 2011), Public sector innovation has recently witnessed evolution in the research and publications. Some areas of innovation in the public sector are focusing, for example, on:

- The rigid management system of the NPM and how to reform it through innovation adoption (Pollitt and Bouckaert 2011), which is considered the area of interest in this research.
- Transforming the government management model from the government to governance through less operations involvement (Rhodes 1999).
- The Big Society (society empowerment) concept and its influence on public sector management, where government delegates a significant amount of responsibilities to communities and volunteers (Lowndes and Pratchett 2012).
- Technology adoption in the public sector and how to transform government's services and management to electronic government model (Bekkers and Homburg 2005) or further evolvement paradigms to the digital government through innovation contextualization model (Janowski 2015).

However, the author is going to review innovation in the public sector using a systematic review approach.

4.6.1. The Definition of Innovation in the Public Sector:

There are several definitions of innovation in the public sector based on the scholar's preferences and research areas of interests. Some scholars like (Meijer 2014) is defining innovation

based on individual innovation as “innovators” out of the organisational innovativeness. Anderson and West (1998) through their four-facets of group innovation identified innovation through a team of innovators who are supported by the organisation for innovation generation and implementation. Innovation within the public organisations' context was defined by (Borins 2000) as the first innovation adoption of an idea at an organisational level. Rogers (2003) has extended the definition of innovation based on innovators at the individual level and extend to the level of organisational adoption of a new idea or practice through its innovation employees or at the entity level. Following (Walker 1969) definition of innovation, Bhatti et al. (2011) explained organisational innovation as “innovation is to be understood as a policy, programme, or idea which is new to the organisation adopting it”. Also, innovation as a novelty in the public sector was discussed by many scholars like (Bloch and Bugge 2013). Finally, some scholars have provided the innovation definition as a “novelty” and its first adoption within an organisational context (Salge and Vera 2012).

Based on the mentioned definitions above, Public sector innovation could be defined as the new idea adoption at organisational and employees levels which require to initially developing an innovation strategy to enhance or to create a new product, organisational practices, or both. However, this research going to investigate this definition more towards recent definitions and debates.

4.6.2. Dimensions of Innovation in the Public Sector:

Despite the fact that the definition of innovation in the public sector varies, the innovation dimensions in this field are more specified, as concluded by Moore and Hartley (2008). In the same

context, Damanpour et al. (2009) as cited in Wu et al. (2011) stated that “Innovation is a multifaceted construct, and it is helpful to distinguish amongst types of innovation and to examine their possibly different antecedents, processes and consequences”. Some scholars like Hartley (2005) classified the innovation framework by identifying seven innovation dimensions: “governance, strategic, position, process, product, rhetorical, and service”. Other scholars like Wu et al. (2011) identified five dimensions of innovation in their adopted typology: “Services, Technology, Management, Collaborative, and Governance”. However, these dimensions are extensions included in (Damanpour 1991) main four defined dimensions of the innovation in the public sector (Process, Product or services, Governance, and Conceptual). The following points present the main four facets of innovation in the public sector:

4.6.2.1. Organisational Innovation at the Process level:

The focus in this category that represents the majority of innovation in the public sector is the organisational internal and external process quality and enhancements at administrative and technology levels (Walker 2014). Below are two examples in this dimension:

- i. Innovation at administrative processes level:** the development of a new organisational paradigm, new approaches, and new techniques for processes and practices (Walker 2008)
- ii. Innovation at the technological processes level:** the development of new system technologies within the field of information technology (Walker 2006) aiming to ease and improve the offered organisational services to the targeted customers.

4.6.2.2. Organisational Innovation at Product and Services Level:

The focus in this category that represents the second majority of innovation in the public sector is service development and delivery (Damanpour et al. 2009). For example, the development of new organisational services expansionary, totally, or evolutionary to existing and new users (Osborne and Flynn 1997).

4.6.2.3. Organisational Innovation at Governance Level:

Governance innovation is diverse from process or service innovation and has been defined by some scholars like Wu et al. (2011) as “new approaches and practices that aim to manage democratic institutions, trigger citizen participation and fight corruption”. When it comes to in-depth administrative reform, innovation governance as a political and polycentric construct became vital (Ngok and Zhu 2007). For example, the development of new processes to solve certain complications in managing the organisation through a democratic election, public engagement, and administrative delegation (Foster 2006).

4.6.2.4. Organisational Innovation at the Conceptual Level:

According to Bekkers et al. (2011), conceptual innovation is developing a new concept or paradigm that tackles the organisational challenge through reconsidering the nature of the challenge from a different perspective through reframing the challenge structure and its possible solutions.

For example “The introduction of a new paradigm that, when assessing a person’s work disability, insurance physicians no longer analyse what people cannot do, but instead analyse what they can still do, hence focusing on potential workability” as emphasised by De Vries et al. (2016).



Figure (7): Innovation Dimensions in Public Sector

According to De Vries et al. (2016), the organisational needs will determine whether to use one facet or hybrid facets as a result of integrating two or more facets to accommodate particular innovation generation and adoption. For example, by integrating Damanpour (1987) ancillary innovation and Mandell and Steelman (2003) inter-organisational innovation; Wu et al. (2011) have introduced “Collaborative innovation” as an integrated innovation, and defined it as “as boundary spanning activities in the process of service delivery and management (for example, alliances, partnerships, collaborations and networking)”. They also added, “Collaborative innovation is not limited to governments or their agencies, but increasingly involves collaboration with not-for-profit organizations and private enterprises”. Therefore, it is essential for this research to consider these public innovation facets as distinct individuals and as an integrative hybrid to respond to specific organisational and customers needs.

4.6.3. Public Sector Innovation Outcomes

Public sector organisations like “government ministries at the State and Federal level, municipalities, counties or local area authorities at the regional level, or individual institutions for service providers of education, health or social welfare” are considered falling under a domain of public sector organisations that represents a homogenous governance models within the public sector as concluded by Arundel, Bloch and Ferguson (2016). In addition, they emphasised the fact that the public sector in the literature has a standard administration management style that is adopting similar “innovation inputs, processes and outcomes” within the public sector. In the same context, Bysted and Jespersen (2014) argued that the NPM model followed by public sector organisation has joined-up and connected these organisations were all are intended to adopt innovation culture. This approach gives higher decision-making power to the manager to develop and implement innovation in the public sector within the NPM forms of governance.

Under the above-mentioned conditions, public sector service providers are sharing a similar motivation for innovation development and implementation methods that depend on the senior and middle management personality and professionalism to innovate (Halvorsen et al. 2005). Hence, public sector organisations are sharing similar innovation governance that is influencing the innovation adoption and implementation at organisations and individuals levels within common defined framework, objectives and outcomes. However, even though public sector organisation are sharing conceptual collective innovation inputs, processes, and outcomes, they still defer when it comes to the type of applications depending on the sort of their provided services.

March and Olsen (1989) grounded two main logics for innovation in the public sector in order to understand the functioning of them. The first one is “consequences” like efficiency and effectiveness that resulted from adopted innovation in the public sector (Weber et al. 2004). The second is “appropriateness” that is government legitimacy, and citizens thrust on the government capability to create solutions for community challenges and at the same time increase citizens participation in solutions generation and implementation (Carter and Belanger 2005). As concluded by (Bekkers et al. 2011) innovation outcomes in the public sector are and not limited to efficiency, trust acquiring and legitimacy; they are also considered part of the innovation in the public sector. Below are the main innovation targets in the public sector, including education, as presented in De Vries et al. (2016).



Figure (8): Innovation Targets in the Public Sector (De Vries et al. 2016)

4.6.4. Public Organisation Innovation Antecedents

According to Damanpour and Aravind (2011), four main areas influence the innovation in the public sector: Employees, Organisation, External Environment, and the attributes and adoption of innovation. More details on these antecedents will be provided in the following points:

4.6.4.1. Employee Antecedents

According to De Vries et al. (2016), the individual antecedents for innovation generation, adoption, and diffusion are summarized into the following:

- Employee autonomy through organisational empowerment,
- Organisational position through tenure and mobility,
- Professionalism related to job knowledge, skills and competencies,
- Creativity in solving problems and risk acceptance,
- Job commitment and satisfaction
- Shared perspectives and norms
- Innovation acceptance in general, and
- Employee age and gender.

The organisational antecedents are discussed in the following section.

4.6.4.2. Organisation Culture Antecedents

Mainly, organisational antecedents are related to either organisational leadership or resources. In other words, these organisational antecedents are and not limited to “ Slack resources

(time, money, and ICT facilities), Leadership style, Degree of risk aversion and the room for learning, incentives and rewards, Conflicts, and organisational structure” as concluded by De Vries et al. (2016). The nature of the provided service as one of the organisational antecedents might be added to this context in the way to support or adverse innovation. For example, in higher education when it comes to change the curriculum and teaching and learning methodology, innovation adoption face real challenges due to the adopted rule and regulations from organisational management in addition to accreditation and awarding bodies and authorities.

Many motivations are encouraging the public sector to adopt an innovation. These motivations include a combination of political, legal, scientific, and economic rationalities. This combination of motivations and economic pressure in addition to increasing social welfare and national awards as cited in Townsend (2013) would add value to innovation generation and adoption, and would lead to the facilitation of innovation diffusion within the organisation by empowering innovation champions.

4.6.4.3. External Environment Antecedents

As mentioned by Berry (1994), the innovation adoption in the public increases based on the number of public organisations who adopted strategic planning and at the same time working in the same state. Also, collaborative innovation in the public sector and adopting peers norms and innovative solution is well-known in the public sector (Mintrom, and Vergari 1998). Recently, governments start developing open innovation policies at the national level to create favourable

innovation climate through learning from “private sector experiences, experimenting with the concept both inside and outside of governments” as argued by Lee et al. (2012).

Laws, regulations, cultural norms, and social rules are shaping the conditions of innovation, as explained by Edquist(2005). In this perspective, Bloch and Bugge (2013) added that these innovation influencers “can have a significant impact on stimulating innovation”. Rules and regulatory aspects are considered in general as innovation barriers in the public sector, as argued by Johns et al. (2006). On the other hand, Bloch and Bugge (2013) indicated that the public sector is under constant changes, which might lead the public organisation to continuously “adjust to a changing environment or be frequently required to make changes based on new regulations or policies”. Rogers-Dillon (1999) argued that regulations and requirements are promoting innovation and should not be limited. This argument was not supported by many scholars like Wu et al. (2011) who suggested that “deregulation and innovation in public service delivery are increasingly accepted as necessary by local governments pursuing economic development”. However, the main concept here is that governments should create flexible regulations to facilitate innovation and at the same time, maintain the quality of the provided services in the public sector.

4.6.4.4. Attributes and adoption of Innovation

According to Rogers (2003), there are five intrinsic innovation attributes “(1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability”. The antecedents related to environmental level, organisational level, and individual level have been mentioned in the previous points. These antecedents, in addition to intrinsic attributes of

innovation, are, in general, influencing innovation adoption. On the other hand, Customers and willing markets are playing a significant role in innovation adoption and implementation. Foroudi et al. (2016) emphasises on the influence of the market challenges (competition and uncertainty) and consumer (demographics, intellectual experience, and shopping experience) on innovation adoption. Therefore, the innovation outcome should be accepted by the community (end-user) along with customer satisfaction in order to consider such innovation as a success.

In summary, the individual, group, organisation culture and resources, technology, external environment, community, and the market have a significant influence on the innovation adoption and generation in the public sector. There should be a proper portion of these areas to formulate a functional innovation equation. In this research, these factors were considered in constructing the research central three notions (employee empowerment, cultural intelligence, the emergence of innovation) in the way to develop an innovation ecosystem for the public sector higher education as presented in chapter five and six from this research.

4.6.5. Public Sector New Public Management

Since the 1980s, the New Public Management (NPM) with its four leading characters as stated by Groot and Budding (2008) “efficiency, accountability, performance measurement, and rational planning” has been followed by the most of public organisations. NPM target, in general, is to reduce system complexity to facilitate best resources utilisation, implement product enhancement, cost optimisation, create a better environment for private sector investments, and eventually satisfy customers as concluded by Osborne (2010). On the other hand, there are useful

metrics like Balance Scorecard that is considered as a strategic control system to support business innovation through creating a balance between financial and non-financial metrics along with short and long-term goals in addition to tracking performance and communicating the organisational goals with internal and external stakeholders (Zizlavsky 2014). However, the increase of implementing the NPM system efficiency has led to establishing rigid metrics that undertake explicit delivery framework, resources and methods that may conflict the impetus of innovation as stressed by Potts (2009). In the same context, Chittoo, Ramphul and Nowbutsing (2009) acknowledged that this rigid system is making the public sector slower to adopt new processes for enhancements, which increased the need to reform this old system of management to meet the new globalisation requirements towards international competitiveness and cope with the technology revolution as emphasised by Bekkers and Homburg (2005). Furthermore, “there is pressure to save money and reduce budgets since the NPM reforms in the 1980s and particularly since the 2008 economic crises, so creating a workplace encouraging innovation is crucial” as stressed by Demircioglu and Audretsch (2017). Therefore, the need to create an innovation culture in the public sector is increasing in order to overcome the critical obstructions caused by its rigid system (Pollitt and Bouckaert 2011), culture of averting innovation risk (Borins 2001), social challenges (Townsend 2013), community challenges (Carter and Belanger 2005), technology transformations (Janowski 2015), and global economies transformation (Chandan 2015).

Generally, most of the higher education institutions are publicly funded and been seen as a standalone sector that is not directly equivalent to other organisations that might also include the public entities as concluded by Ferlie, Musselin and Andresani (2008). Until the end of the seventies, some countries like the United Kingdom used to provide the higher education with a

high degree of autonomy with isolation from governmental steering, where a sole academic community regulate them via the implementation of agreed norms, values, and practices (Kogan and Hanney 2000). Also, there is another model of higher education governance freedom that is considering this sector as protected commodities that the government should support through evaluative governance, supervision, regulations, and protection from possible failure as concluded by Amaral et al. (2000). In the same context, Mansour (2017) explained that federally funded universities in the UAE are protected by the government from privatising in the way to support free education for all citizens. Therefore, higher education in the public sector from this perspective possess a level of autonomy to practice its activities with government support through minimal interventions, that gives this sector a level of uniqueness comparing with other service providers within the public sector.

On the other hand, Ferlie, Musselin and Andresani (2008) indicated that there are many similar fundamental settings between the public organisations and public higher education service providers as both rely heavily on the government financing and have firmly structured institutionalised. Also, when the government is driving and steering the higher education from control perspective and applying its countervailing power on higher education service providers to meet broad public policy goals, for example, reducing expenses, improving quality, or ensuring social equity then higher education is similar to any other governmentally funded services as argued by Van der Meulen (1998). Furthermore, public sector NPM model has implemented a reform on the public sector as a whole that led to fundamentally reframing the higher education to be managed as a knowledge corporation with strategic planning process leading to define targets, incentive structure, performance assessment system, and expenses policy like other publicly funded services

(Peters 2013). In this context, the public sector in the UAE adopted the NPM for the past four decades, where the government is implementing reforms for restructuring the whole administrative and economic systems in addition to business management tools for public sector organisations following defined measures as concluded by Mansour (2017).

These conclusions are leading to the fact that public organisations service providers are following the NPM explicit delivery framework that is driving and controlling its subordinates from policy, management, financial, quality, and measurable targeted outcomes at entity and community levels. In addition, it should be taken into consideration that most of the higher education service providers are funded by the government that follows the NPM system explicit delivery framework. This lead to the fact that higher education that is following governmental model is not different from other publicly funded organisation like health care, justice, and other public services as concluded by Ferlie, Musselin and Andresani (2008).

Based on these conclusions, this research is considering that public sector service providers, including public higher education, are following a similar conceptual management system (NPM). This means that public service providers are sharing similar innovation inputs, processes, and outcomes from a concept point of view with respect to the nature of applications related to the distinct organisational offered service that will be carefully utilised in this research. Also, this research is following object-based method (Arundel, Bloch and Ferguson 2016) for innovation in the public sector that is focusing on the influence on of the employee empowerment and cultural intelligence on the emergence of innovation via impacting the organisation innovation culture and activities (business practices) within a defined innovation ecosystem.

On the other hand, this research is not discussing innovation from the subject-based point of view that is focusing on innovation from strategy, evaluation of innovative organisation activities, or measuring innovation outcomes (Arundel, Bloch and Ferguson 2016). Hence, Innovation in the public sector higher education providers is conceptually following similar aspects of the public sector innovation in general. This concept will be investigated in this research via business activities, processes, and forms that support the emergence of innovation outcomes in this sector, rather than investigating the innovation as a high strategy at the organisational level or how to measure innovation in the public sector context.

In summary, there are many internal and external challenges in the public sector at the individual, group, organisational, and system levels that require more enhancements through adopting innovation. These challenges are considered promising areas to further the research toward enhancing the public sector rigid management system in order to achieve better outcomes. This research is focusing on using innovation to support the public sector to overcome its rigid system and become the right environment for innovation to emerge. This approach will be through the influence of the employee empowerment and cultural intelligence, which will be thoroughly investigated and discussed as the central concept of this research.

4.7. Emergence and Innovation.

Van Alstyne and Logan (2007) described emergence as a “term used in the study of complex systems, including physical, biological, social, and economic systems”. They also added,

“Emergence refers to the process by which a higher level of organization arises through the aggregation and interaction of lower level components, revealing new behaviors or properties not associated with the lower level components”. This definition is based on Goldstein (1999) when he defined emergence as “the arising of novel and coherent structures, patterns, and properties during the process of self-organization in complex systems”. Goldstein (1999) also added, “Emergent phenomena are conceptualized as occurring on the macro level, in contrast to the micro-level components and processes out of which they arise”. These definitions are considering emergence as phenomena with a level of “newness and unpredictable patterns” that happen from a bottom-up approach to create a result that is different in nature from its components. For example, when oxygen and hydrogen combine to create water, the new substance witness is a feature that emerged at macro-level that neither oxygen nor hydrogen has it as individual components at micro-level.

Emergence (bring to light or unforeseen occurrence in Latin) as defined by Deguet et al. (2006), is a “concept that first appeared in philosophy, has been widely explored in the domain of complex systems and is sometimes considered to be the key ingredient that makes ‘complex systems’ ‘complex’”. The emergence phenomena appear in different ways of physical systems or via simulation systems. Such phenomena has common properties as radical novelty that is not been observed previously, coherence or correlation through integrating the separated lower-level components to generate higher-level unity, global or macro level where the locus of emergence occurs, dynamic in rising as evolving complex system over time, and ostensive by showing emergence in real life as explained by Goldstein (1999).

Using the scientific and mathematical sources of complexity theory, Goldstein (1999) provided better insights into the emergences system features. Goldstein (1999) stated that “Emergence requires systems with at least the following characteristics (in spite of potential confusion caused by the heterogeneous vocabularies and methodologies of the diverse sources of emergence, there are certain ideas that cut across them): Self-organization, Nonlinearity, Beyond equilibrium, and Attractors”. Self-organisation, as described by Goldstein (1999), is a self-regularity process where the term of emergence phenomena is considered as novel structure refers to “the creative, self-generated, adaptability seeking behavior of a complex system” that is self-emerged. Also, Emergence phenomena nonlinearity is recognised through non-linear negative and positive feedback loops and conditions (between macro and micro levels) and should include a focus on the inter-activity found in the emergent phenomena in addition to small cause and large effect (Goldstein 1999).

Emergence phenomena typically occur beyond equilibrium conditions as a complex and radical novelty that arises from allowing the amplification of random events (Nicolis 1989). Finally, Emergence phenomena attractors like fixed points “attractors often describe dissipative systems (those that lose energy— for example, due to friction)”, limit cycles “a system that cycles periodically over the same set of states, never coming to rest”, and strange attractors “close points diverge exponentially over time” and “do not wind up in a steady state nor do they repeat the same pattern of behaviour” that are “following an intervention in a system (changing the value of some variable)” that cause a change in the system behaviour through a transient stage that requires time to come back to the normal behaviour as stated by Rickles et al. (2007).

Emergence as phenomena occurs in a significant and innovative process that is “coincident to the new qualitative levels introduced as complex systems” as stated by Goldstein (1999) or might occur as “the results of a continuous and complex interaction between many actors” as argued by Toivonen and Tuominen (2009). For emergence to occur, there are four leading causes as stated by Van Alstyne and Logan (2007) “material, formal (the pattern), efficient (the designer) and final or telos cause (the purpose). The designer is the efficient cause trying to make the final cause – the purpose”. On the other hand, emergence might occurs when reduction (decompose a whole to its original atoms and generate a new whole in different ways) process fail (due to the weak knowledge or strong whole conditions) as argued by (Humphreys 2006). This process failure will trigger the need for creating a solution to overcome the problem that eventually triggers the emergence of innovation.

When it comes to link innovation to the emergence phenomena process, Van Alstyne and Logan (2007) referred innovation to the “process of introducing a new idea, method, device, or practice in order to secure positive change within the marketplace”. They also added, “the goal of innovation is to deliver increased value to the end user, for example, by launching a new product or service or by making an existing one more desirable”. Alstyne and Logan (2007) concluded that to have a successful innovation of new product or services; the project design must “ harness the process of emergence; for it is only through the bottom-up and massively iterative unfolding of emergence that new and improved products and services are successfully refined, introduced and diffused into the marketplace”. As a result, when there are a need, purpose and particular environment; innovation emerges through a bottom-up process to respond to the need and achieve

the desired purpose through structured and non-structured approaches within the incubation and implementation environments.

The homeostatic relationship between design “creation for reproduction” through “the assemblage of a set of components that is able to achieve a function or purpose that the components by themselves cannot achieve” and emergence “a new arrangement of the components of an entity that did not pertain to the individual components” is a crucial condition for facilitating innovation as stated by Van Alstyne and Logan (2007). In this regards, they have related to the emergence and design of innovation by introducing their similarities and differences. For similarities, both emergence and design have “Propagation of organization toward a goal or purpose”, “Concerned with selection”, “Development of differentiation from generality”, and “Morphogenesis (the birth of new forms)” as specified by Van Alstyne and Logan, (2007).

On the other hand, they distinguished between emergence and design as the design is a human intention that follows a particular purpose of cognitive and conceptual context through the Top-down development process. The design aims to fix relationships between components through robust constraints setting to control the wholes development and implementation process. While Emergence is a cognitive and conceptual phenomenon that is “characterized by the autonomy of massively multiple agents or components” as stated by Van Alstyne and Logan (2007) occur and evolve through the bottom-up development process. Emergence aims to maintain relationships between components through exploring and testing constraints to influence the wholes development and implementation process. Therefore, the emergence of Innovation in services, products, and the process might be a result of research and development process, coincident “not

the results of a deliberate activity”, or client needs that is difficult to be detected due to the fuzzy nature of the desired outcomes as concluded by Toivonen and Tuominen (2009).

Schumpeter (1934) defined different forms of innovation that are reproducible like introduce new product or new product quality, new production method, new market creation, new raw material resources, new way to handling a commodity commercially, new organisation establishment requirements, or combination of existing things that is considered as the most common innovation forms. In these definitions, the emergence of innovation requires new methods, processes, materials, commercial dimension, organisation, market, industry, and community for establishing organisations. Also, Schumpeter (1934) and Schumpeter (1942) positioned entrepreneurs (who are not necessarily inventors or extraordinary individuals) in the centre of innovation as innovative agents that resulted in laying the groundwork for studying and examine the emergence of innovation in day-to-day business activities (Toivonen and Tuominen 2009).

As a result, the emergence of innovation requires agents (individuals, group, organisation, market, community, and customers) that are interacting with the innovation environment where innovation could be produced and adopted. Based on that, the overall followed process of the interactions in this research is starting from the micro level to influence the macro-level via a bottom-up effect that encourages the top-down effect to support the innovation adoption in dynamic exchange cycle of decisions, feedback, and supports the emergence of innovation in the public sector higher education. These conclusions will be further explored in chapter five to support in defining the innovation agents towards embed then in the innovation drivers to construct the

innovation ecosystem that eventually supports the emergence of innovation in the public sector higher education providers.

4.8. Summary of the Theoretical Background for the Emergence of Innovation

Innovation is a must for organisations to keep business continuity and survive in a competitive market. Also, Individuals are playing a significant role in generating and adopting innovation within an organisational context and the external environment. There are many theories on how innovation emerges within a joint agreement on the fact that innovators are considered as the essential agent for innovation to emerge. Innovators who are empowered acquire the required abilities and capabilities to create the right environment for innovation to emerge in the public sector. They play a significant role through embedding the innovation to become a genuine part of the organisational culture, and acting as a platform to facilitate the interactions between innovation agents. Here, it is worth to mention that the outcomes of CQ like cross-cultural leadership, enhancing performance, and effectiveness might add value for those empowered innovators to have better performance in a multicultural setting for innovation adoption.

Public sector, in general, could be considered as a promising environment for innovation to become a management norm and culture. This presumption is based on the availability of resources, legislations, policies, capacities, customers, and the market that support and facilitate the emergence of innovation within this sector. By having empowered employees with cultural intelligence in addition to a supportive working environment with leadership that accepts

innovation success and considered failure as an opportunity, innovation will have better chances to emerge and succeed within this sector. This conclusion is encouraging for bringing empowerment, CQ, and the emergence of innovation to the public sector context and examine how the individual empowerment and CQ would support in creating the environment in the public sector where innovation emerges as part of the organisational culture.

These conclusions and findings that have evolved from the theoretical background of empowerment, CQ, and the emergence of innovation in the public sector have led to developing this research Conceptual Framework, as will be presented in the next chapter.

5. CHAPTER FIVE: RESEARCH CONCEPTUAL FRAMEWORK

5.1. Introduction

This chapter presents critical reviews of the literature in relation to this research central three notions: employee empowerment, cultural intelligence, and the emergence of innovation. Also, the literature reviews were funnelled to become more relevant to the public sector context, and at the same time, the alignments of these three notions' factors were investigated, and international best practices related to these three notions were carefully employed to serve public sector settings.

The primary aim of this research is to investigate the influence of individuals empowerment and their cultural intelligence on the emergence of Innovation in the public sector, especially in public sector higher education service providers. The expected outcome of this research is to establish a ground theory for the emergence of innovation in the public sector to support creating a working environment within this sector where innovation emerges successfully. The consideration of the emergence of innovation in this research is through bringing the right components at the micro-level and link them to create a robust macro level that produces innovation.

It is worth to mention here that public sector innovation outcomes for public service providers including education were summarised by (De Vries et al. 2016) through their systematic review: increase customer satisfaction, tackling social problems, involve citizens, involve the private sector, safety, fairness, increase effectiveness, and increase efficiency. Also, this research is

following object-based approach on investigating the employee empowerment and cultural intelligence impact on the emergence of innovation in the public sector through impacting the business practices at individual, group, organisational, and community levels rather than investigating a subject-based innovation that focusses on a type of innovation like strategy, measurement, and performance (Arundel, Bloch, and Ferguson 2016). Furthermore, this research consider Public sector service providers including education are following similar management (NPM) that enforced similar innovation inputs, process, and outcomes (Halvorsen et al. 2005), (Ferlie, Musselin and Andresani 2008), (Bysted and Jespersen 2014) and (Arundel, Bloch and Ferguson 2016). Finally, public sector services providers are sharing joint innovation aspects. However, this research is segregating these commonalities when discussing the implementation of the innovation outcomes to suit the needs of education, as shown in this research questionnaire. On the other hand, the individual empowerment and cultural intelligence notions will be used to identify, interlink, and lead the innovation components driven by defined “need” and “purpose” to facilitate the emergence of innovation and drive it to the successful edge. In the upcoming sections, the author will present and discuss the research conceptual framework constructs based on related literature review and research gaps defined in related empirical studies.

5.2. Empowerment Construct

Based on the evolvement of empowerment theories, many scholars have introduced the empowerment construct and context with respect to their field of study and interest at individual and social levels. On the other hand, Kelly (1971) has described several qualities for empowerment

like diversity tolerance, developing eco-identity (i.e., community-based), and adequate adapting with various resources that are consistent with empowerment context. Also, Fawcett et al. (1994) provided a framework for empowering strategies for groups and individual capacity-building supported by an environment that leverages the empowerment development. In the same context, Kelly (1970) introduced field-assessment skills, theory and practise integration and community resources identification as strategies for enabling individuals applying empowerment approach. Both scholars had shown empowerment as an interactive process between individuals and their environment.

Individual skills according to Kieffer (1984) are the outcomes of empowerment process; these skills are in the view of knowledge and capacities, the critical aspects of political consciousness, a capacity to take an interest with others, an ability to adapt to frustration, and influencing the environment despite challenges. Based on the connection between individual and environment, and in order to foreground a theory for empowerment, it requires to take into consideration that empowerment in context and population differs from that one individual to another (Zimmerman 1995). The individual ability or its absence will play a significant role in constructing an individual character that impacts his or her level of effectiveness of the life course (Pinderhughes 1983).

In general, Processes and Outcomes are the main two components of empowerment theory (Swift and Levine 1987), as the empowerment influence action, activities, or structures, and hence, outcomes occur based on processes empowerment. Here, it is critical to distinguish between the process empowerment and the outcomes empowerment to furnish a platform for defining

empowerment theory (Zimmerman 2000). Control, obtain resources and understand an individual's environment are organisational processes that are considered empowering if they led to developing individuals autonomy, problem-solving, and decision-making skills (Zimmerman 2000). Processes empowerment varies across the levels of relevance based on the linkage to the organisation or environment perspective. For example, leadership and decision-making are empowering processes connected to an organisational level, and on the other hand, media, community resources, and accessible government is connected to the environment (Perkins and Zimmerman 1995).

Outcomes empowerment are the operational features for of empowerment that could be presumed by studying the consequences of individual acquisition higher power in the community, or the impact of interferences designed to empower participants (Zimmerman 2000). Also, outcomes empowerment varies across levels of relevance to the individual, group, organisation, or community. For example, perceived control, proactive behaviour, and skills are considered as the outcomes empowerment that is connected to an individual. On the other hand, organisational networks, useful resources acquisition, and the leverage of policy are the connected outcomes to the organisation. Furthermore, pluralism evidence, the presence of hierarchical coalition, and the access to community resources are connected to the community (Zimmerman 2000). Below diagram provide a better presentation of the connections between process and outcome empowerment.

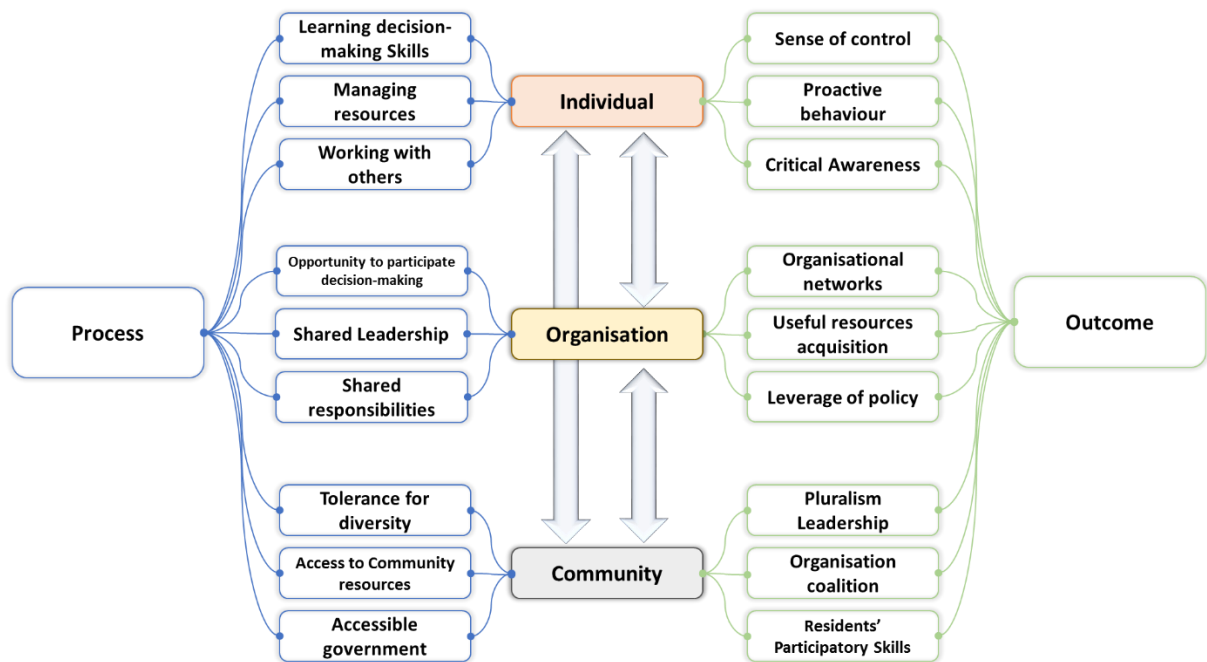


Figure (9) Zimmerman's Empowerment Model of Process and Outcomes

The connections shown in the diagram above are providing a level of analysis for direct and passive influences between empowerment processes and outcomes. Also, individuals, organisations and environment empowerment are reciprocal and influencing each other. This level of interaction is forming the ground for analysing the relations and integrations amongst processes and outcomes empowerment where individual, organisation, and community are considered the mediators in Zimmerman's Empowerment Model (ZEM). In the following pages, ZEM of process and control will be presented in further analysis through its three main factors: Psychological Empowerment (PE), Organisational Empowerment (OE), and Community Empowerment (CE), in the way to construct the empowerment notion for this research to the latest empowerment model.

5.2.1. Psychological Empowerment (PE)

This section will discuss the psychological empowerment from an individual point of view. According to Zimmerman (1990), PE refers to individual capabilities of being involved in exerting control along with understanding their socio-political environment by identifying powerful people, resources, connections, and factors that influence their decision making. This process for the individual power of knowledge for the socio-political environment is described by Sue and Zan (1980) as “Understanding Causal Agent”. In the same context, the critical socio-political environment included the ability to engage or disengage with conflict and the ability to identify and mobilise resources to facilitate targets achievement (Kieffer 1984). People need to be exposed to community organisations, which mediates between large impersonal organisations and individual lives and contribute to decrease the feeling of powerlessness, alienation, and withdrawal from the community level (Berger & Neuhaus 1977).

There are different dimensions of PE-related to empowered persons that can be identified by intrapersonal, interactional, and behavioural (Zimmerman 1995). Personality, cognitive, and motivational aspects of perceived control are the main components of intrapersonal (Zimmerman and Rappaport 1988). The use of analytical skills to influence the surrounding environment by resources mobilisation, casual understanding agents, critical environment awareness, and the development of decision-making are the main components of interactional (Zimmerman 1995). Participating in community organisation or activities that facilitate action taking to exert control are the main components of behavioural (Berger and Neuhaus 1977). In the way to develop empowerment theory; this research will focus on two PE dimensions: Perceived Control and

Citizen Participation, and then, the research will be extended to the latest scholars contributions in PE.

5.2.1.1. Perceived Control

Individuals reactions are based on the way they perceive controllable and uncontrollable position, where the belief in perceiving control influence the outcomes on wither to achieve the target or avoid undesirable conditions (Gatchel 1980). The way that individual perceived control is participating in predicting healthy behaviour that reduces psychological stress (Visser 1986). Also, scholars have found that prescribing control is influencing individual social actions and political engagement (Lefcourt 1976). According to Zimmerman and Rappaport (1988), to study the intrapersonal component of PE, the investigation should focus on measuring the perceived control through the three main dimensions: personality, cognitive, and motivation.

First, the personality domain (locus of control) is based on individual believe in the causal of success and failure in his or her life, and incorporates a general assumption about the connection between individual's action and outcomes (Rotter 1966). The second domain is cognitive (self-efficiency) that refers to the individual ability to make the right judgment on the required behaviour to be performed to achieve the desired target (Bandura 1977). For example, type of activities to participate in, the extent individual effort in meeting the targets, and the length of persisting despite assorted variety are determined by self-efficiency (Bandura 1982). The third domain is the motivation that is related to the notion of mastering the environment through influencing the

environment not only by feeling but also by including the behaviour to exert control (Zimmerman 2000).

5.2.1.2. Citizen Participation

Participation in community organisations more related to welfare rights increase individuals activism, engagement, competence, and control and decrease the allegation (Chavis and Wandersman 1990). People who are considered activists always feel better about themselves, reported stronger feeling in political efficacy, and more likely to develop new friends (Stone and Levine 1985). In the same context, empowering the individual with the necessary training will facilitate for them to gain control over important aspects of their lives (Balcazar et al. 1990).

On the other hand, empowered employees understand their duties, perform their tasks, engage through plans, analyse job challenges and provide solutions for better performance (Indra 2011). Scholars like (Choong et al. 2011) analysed the psychological level to address the factors that influence the empowerment concept as a process through organisational objectives and outcomes, the feeling of perceived control, authority perception, and employee internalisation that employees' emotions and inner worlds. To empower an employee; management has to engage the employees in the empowerment process for better outcomes (Conger and Kanungo 1988).

To increase motivation through psychological empowerment, (Thomas and Velthouse 1990) has suggested a model that comprises four main elements: effect, competence, meaningfulness, and choice with the assumption that the integration of these elements together without losing any

one of them will contribute toward increasing the efficiency of employees performance. This model was enhanced by Spreitzer (1995) through considering the individual as the centre of the empowerment studies. Organisation resources are not sufficient to empower the employees; it the way that employees perceives and practices the empowerment will make the difference and will influence the organisational strategy and performance accordingly. The dependency of employee's empowerment is related to the employee position and performance in the organisation and how managers are providing the employees to freely share their opinions and suggestions (Choong et al. 2011).

5.2.2. Organisational Empowerment (OE)

This part will focus on exploring the empowerment from an organisation point of view. Zimmerman (2000) profound two main types of the OE: the first is called empowering organisations where people are braced with opportunities to gain control over their lives with marginal impact on the policy. Hierarchical organisations are considered less empowering comparing with organisations that perform with shared responsibilities, a supportive working environment, and exert social activities (Prestby 1990). The second type is called empowered organisations that provide the flexibility to influence policy decision or offer effective alternatives for service provisions. Organisational management style is playing a significant role in empowering members (Conger and Kanungo 1988). However, these organisations are undermining empowerment in real decision-making power was not cascaded to the members (Gurber and Trickett 1987).

On the other hand, according to Zimmerman (2000) “empowered organisations are those that successfully thrive among competitors, meet their goals, and develop in ways the enhance their effectiveness”. He also stated that employees in the empowered organisations having the opportunities to become a principal broker in policy-decision making with or without building a sense of empowerment, at the same time, these organisations may extend to broader geographical areas and multicultural audiences. Figure (10) is illustrating the main aspects of empowering and empowered organisations.

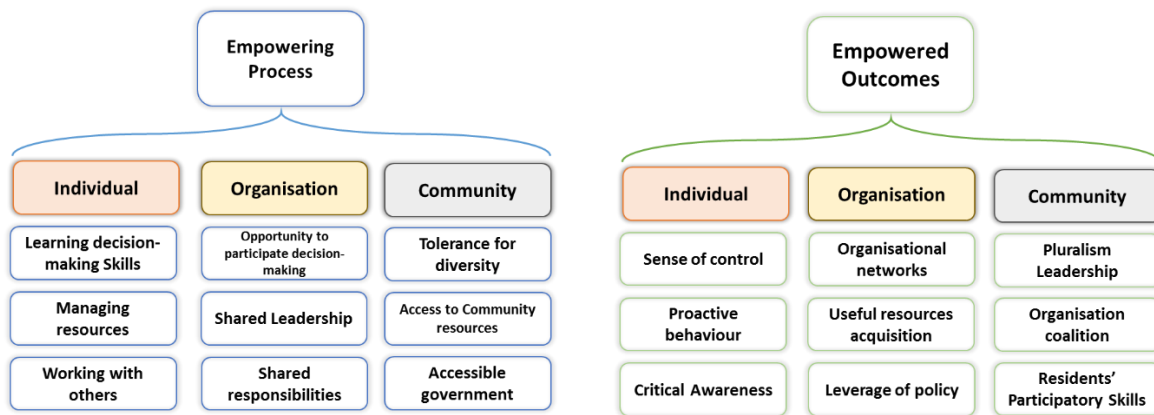


Figure (10) Zimmerman's model (2000) of Empowering and Empowered Process and Outcomes.

5.2.2.1. Empowering Organisation (people empowerment)

Organisational structure research is considered as a reliable resource to provide insights for empowering organisations. Glenn (2017) stated that “An empowered organisation is one that is democratically managed, and its members share information and control over decisions and are involved in the design, implementation and monitoring of efforts toward goals defined by group consensus”. According to Malone (2004) organisations with leaders who encourage the employees

to participate in decision-making and though assigning responsibility to them is considered as an empowering organisation. Also, an organisation with participatory decision-making management style will result in leading to higher job satisfaction and productivity (Miller and Monge 1986). Solomon, as cited in (Jackson 1983), found that employee participation in decision-making reduces the role of conflict and ambiguity, which leads to increase perceived control and job satisfaction. Leaders with efficient empowering behaviour are facilitating for their employees better role clarity with more feeling of self-confidence that leads to higher levels of engagement (Greco et al. 2006).

Another dimension to define empowering organisations is a social climate where (Dougherty 1988) found that high levels of task orientation led to increasing the perceived control over the individual working environment and local government policy. In the same context, task-focused organisations, along with pluralistic decision-making, were more empowering rather than the organisations with less focus and inclusive setting (McMillan et al. 1995). Also, members with shared role and responsibilities are exerting well-being and self-esteem more than those who are led by a central leader (Maton 1988). This understanding might lead to conclude that organisations with participatory decision-making, high levels of task orientation, and task-focused management style are considering empowering organisations that facilitate individual empowerment within an organisational context.

5.2.2.2. Empowered Organisation

This type of organisations is well structured, competent, meeting targets, and continuously enhance effectiveness with or without individual empowerment (Zimmerman 2000). He also

added, organisations with a network management style efficiently compete for acquisition of resources, and leverage of policy are considered empowered organisation. The focus in this type of organisation is the system of governance and multi hierarchical process for operating and resolving conflicts where individuals are a vital broker in the policy-decision process. Skilled and competent employees are playing a significant role in this type of organisation which requires a better understanding of their backgrounds. According to Riger (1984), the conflict between the ideology and the decision-making process leading to demising the organisation, so the understanding of ideological conflict in politically oriented organisations may enhance their empowerment potential. Strategy expansion, creating underpopulated setting, clear organisation structure and governance, and mobilising resources are considered ways for encouraging individual involvement (Zimmerman et al. 1991). This type of involvement is controlled by the organisational system and policies, along with a hierarchical process for process approval.

On the other hand, organised groups are influencing social policies and ensure their needs are met through planning, appeal, data collection, public meeting, and alliance with other organisations to support them achieve their goals (Chekoway 1982). Organisations with a strong social network outside the organisation have better opportunities to grow and expanded faster (Snow et al. 1980). By considering organisations as individuals, they have a better chance of becoming empowered if they have a networking style that connects them with other groups which facilitate resources optimisation towards fostering development (Zimmerman 2000). This type of empowerment forms strong relations between empowered individuals within a group and effective political action that generate a structure for pressure groups through social movement (Glenn 2017).

5.2.3. Community Empowerment (CE)

The community is the outer ring that includes individuals and organisations, and based on this understanding; community empowerment will be defined in this section. Scholars like Iscoe (1974) has defined the competent community in which its skilled individuals have the desire and resources to engage in activities aiming to enhance community life as a competent community. This Iscoe definition is providing the empowered individual dimension and its influence on the community empowerment. On the other hand, when communities interdependently work collaboratively to identify the community needs, develop related strategies, and perform actions to meet these identified needs, such activities are used to describe a competent community (Cotterll 1983). This Cotterll definition provides the empowered organisational dimension and its influence on community empowerment. Hence, competent communities, as suggested by Minkler (1990) are those communities where leadership and its development is shared with the community.

An open governmental system that has strong leadership is seeking advice and support from the citizen, and at the same time takes citizens attitudes and concerns seriously is considered as an example of community process empowering (Zimmerman 2000). This type of process empowerment is providing another dimension for community empowerment participatory. As a result, the empowered community is a platform that initiates the efforts to improve the community, creates involvement opportunities to the citizens, comprises well-connected empowered and empowering organisations, responds to threats to maintain quality life, and facilitates resource accessibility to all citizens, (Zimmerman 2000).

5.2.3.1. Social and Structural Empowerment

Social and structural empowerment is related to social theories like social change and social power (Uzunbacak 2015). Social and structural features (socio-structural) and elements of empowerment have a significant influence on the employee empowerment (Spreitzer 1995). According to Samad (2007), there are two types of socio-structural features; the first one is related to the employee empowerment like leaders performance, work environment, and organisational culture. The second socio-structural features are related to managerial effectiveness and innovation like information sharing, control, and rewarding. These two types of empowerment are based on notions and values of democracy that organisations practice through their effective leadership.

Based on Kanter's four lines of structural power, organisations who are seeking social and structural empowerment should provide their employees from all levels with opportunities for career and professional development, socio-political support, minimising organisational hierarchy, facilitate accessing resources, and encourage employees participation to facilitate information access (Mendoza-Sierra et al. 2014). According to Uzunbacak (2015), for social and structural empowerment influence, it is essential for an organisation to increase employees participation in the decision-making process and through transferring the responsibilities to the subaltern. He also stated that "the sharing of authority and responsibility provides more space for the management to improve the organisation and to ponder creative and innovative ideas".

The focus of social and structural empowerment is on the organisation's capabilities and efforts to eliminating obstacles at organisational, institutional, political, economic, social, and

cultural grounds that might lead to weakening the employees (Spreitzer 1996). Spreitzer explained that these efforts should be through facilitating role clarity, so employees are aware of their responsibilities and how to do them in addition to the access to the required resources. Also, organisations should restructure power when required to make sure that managers are more efficient. Furthermore, when employees make a decision, the organisation through socio-political support will make it possible to acknowledge such decisions. Finally, it is crucial for an organisation to establish a healthy working environment and create an atmosphere that promotes participation and access to the opportunities, support, resources, and information (Kanter's four lines of structural power).

5.2.3.2. Behavioural Empowerment

In recent years, the construct of Positive Organisational Behaviour (POB) started to evolve (Avey et al. 2008). The POB has a primary focus on overall individual wellness that leads to sustaining both organisations as well as individual performance (Cartwright and Cooper 2014). There are four main dimensions of POB paradigm: Leadership, empowerment, organisational citizenship, and the intention to stay within the organisation (Bester, Stander and Van Zyl 2015). The global and open market is providing leaders with challenges and opportunities that require positive employee attitude in accepting their leadership behaviour (Lavelle et al. 2009) and (Youssef & Luthans 2012). In response to the new business environment, employees should gain competence, resources, and strategies that support them to deal with their job roles and management behaviour (Standar and Rothmann 2010).

If organisations want to improve their overall competitiveness, they need to be more innovative (Taplin and Winterton 2007) through empowering individuals and exploiting on their creative thinking and intelligence (Birt, Wallis and Winternitz 2004). Leaders with positive behaviour are creating a positive performance culture that encourages individual creative thinking that leads to influence the organisational outcomes (Fong and Snape 2013). These critical conclusions were behind the scholars growing interested in understanding, predicting, and developing leadership empowering and employees empowerment in both research and practice (Kontoghiorghe 2014).

According to MacPhee et al. (2014) “Leader empowering behaviours can be defined as a facilitative process where employees perceive their leaders to allow self-control, self-regulation, self-management and self-leadership of employees”. In the same context, Spreitzer (1995) as cited in (Bester, Stander and Van Zyl 2015) has described empowering leaders behaviour through “share information and delegate responsibility, encourage accountability, enable participative decision-making, coach, share information, lead by example, and show concern by listening and attending to followers”. In general, there are three main dimensions of empowering leadership behaviour: authority delegation, facilitation, and accountability (Van Dierendonck and Dijkstra 2012). In order to empower employees, leaders should provide them with support, learning and development opportunities, and access to resources (Laschinger et al. 1999). This type of support will increase employees ownership and autonomy that result in more loyalty and turnover retention rates (Brouer et al. 2007).

Uzunbacak (2015) stated that “Behavioural approach not only explains the duties and responsibilities that need to be performed by managers in terms of employee empowerment but also attempts at pointing out what needs to be done in order to eliminate the handicaps in the way of empowerment”. Sharing power with employees, increasing their participation in decision making, and providing them with space for demonstrating knowledge and experience are the main three components in behavioural empowerment process (Bolat 2003) as cited in Uzunbacak (2015). Empowering leadership will result in empowering employees through increasing their engagement, commitment, job satisfaction, role clarity, loyalty, job security, and retention rates (Bester, Stander and Van Zyl 2015). Uzunbacak (2015) concluded that there are many facilities that management should provide in order to empower employees such as “sharing resources and knowledge with employees, transferring authority and responsibility, emphasizing participation, trusting and supporting, and work enrichment”. He also added to these facilities “taking motivation-increasing precautions, establishing a healthy communication atmosphere, encouraging teamwork, supporting training and learning, rewarding and giving feedback should be provided”. The conditions mentioned above are providing a holistic approach to behavioural empowerment that management in organisations needs to facilitate to the employees to empower them and increase their organisational innovativeness. Hence, this study proposed the following hypotheses:

H1a₁: Employee Psychological Empowerment (EE) is associated with the Innovation outcomes in the Public Sector.

H1a₂: Employee Organisational Empowerment (OE) is associated with the Innovation outcomes in the Public Sector.

H1a3: Employee Community Empowerment (CE) is associated with the Innovation outcomes in the Public Sector.

H1a4: Employee Empowerment (EE) is associated with the Innovation outcomes in the Public Sector.

5.2.4. The Adopted Empowerment Construct

The model of measuring empowerment that is developed by Uzunbacak (2015), which is based and enhanced of Zimmerman (2000) model with integrated facts for better variable loading is going to be adapted and adopted in this research as empowerment dimension. Uzunbacak (2015) three empowerments facest are Psychological Empowerment (SE) related to individuals, Behavioural Empowerment (BE) related to managers and leaders, and the integrated Social and Structural Empowerment (SSE) that is related to the organisational internal and external management style, strategies, sharing authority and communication. Hence, the evolved hypotheses based on the below Uzambacak, (2015) as follows:

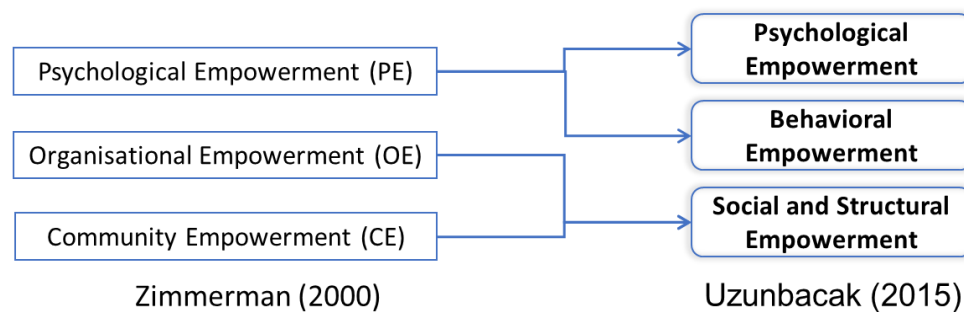


Figure (11) Empowerment Construct for Uzunbacak (2015)

H1b₁: Employee Psychological Empowerment (PE) is associated with the Innovation outcomes in the Public Sector.

H1b₂: Employee Behavioural Empowerment (BE) is associated with the Innovation outcomes in the Public Sector.

H1b₃: Employee Social and Structural Empowerment (CE) is associated with the Innovation outcomes in the Public Sector.

H1b₄: Employee Empowerment (EE) is associated with the Innovation outcomes in the Public Sector.

Based on that, the proposed first independent variable in the conceptual framework, as shown in Figure (12) below:



Figure (12) Empowerment Construct

5.2.5. Conclusion of Empowerment Construct

Employee empowerment is playing a significant role in improving the employee performance and level of satisfaction that leads to increase the opportunities for innovation

adoption at individual and organisational levels. To empower the employees, there are psychological, behavioural, social and structural (organisation, leadership, line manager support, and resources) factors that should be taken into consideration in order to provide the required empowerment. This research is taking this empowerment model into further investigations through adopting it into the research conceptual framework. Also, this model will be constructed by reconsidering the individual empowerment from a psychological and system point of view. More detail on this concept adoption will be provided in the research conceptual framework final version.

5.3. Cultural Intelligence (CQ) Construct

This section introduces two types of CQ measurements: the first one is based on Earley and Ang (2003) conceptualised model and the second one is based on Thomas et al. (2008) conceptualised model. The focus will be more on the motivation facets Earley and Ang (2003) model that is more used and modified by many scholars like Ang et al. (2007) who split the cognitive facet into two facets cognitive and metacognitive. Finally, the CQ construct development will reach to Bucker et al. (2015) model who has integrated the CQ four facets model into two facets model along with more conditions on the targeted sample.

5.3.1. Ang et al. (2007) Conceptualisation of CQ

Based on Sternberg's multiple-loci of intelligence and Earley and Ang (2003) multidimensional construct that includes the CQ four facets (Motivation, Cognition,

Metacognition, and Behavioural); Ang et al. (2007) have developed and validated a 20-item Cultural Intelligence Scale (CQS) that is based on the four facets and provided a reliable measure. They have also introduced the CQS scale with a seven-Likert scale from strongly disagree to strongly agree, where higher score achieved in the CQS could indicate higher CQ. In this context, Ang et al. (2007) stated that “CQ is conceptually and empirically distinct from other individual differences” like emotional intelligence in addition to individual personality. They also added that CQS is developed to test the relationships amongst CQ four facets in addition to the specific outcomes that are indicating the effectiveness of intercultural performance. Ott and Michailova (2016) provided an excellent example of this measurement tool through (Ang et al. 2007) who “have demonstrated that metacognitive and behavioral CQ predict task performance, metacognitive and cognitive CQ relate positively to cultural judgment and decision-making effectiveness, and motivational and behavioral CQ relate positively to cultural adaptation and wellbeing”.

Based on the literature review, many scholars used the 20 – items of the CQS or specific facet of CQS without any modifications like (Firth et al. 2014). Also, some researchers have modified the CQS like (MacNab et al. 2012), and others have used a compressed version of CQS like (Varela and Gatlin-Watts 2014). On the other hand, according to Ott and Michailova (2016), some scholars used only nine items from (Earley et al. 2006) version like Lee and Sukoco (2010). Also, other scholars like Mor et al. (2013) have developed a scale to measure a CQ sub-dimension generated from the cultural metacognition.

5.3.2. Thomas et al. (2008) Conceptualisation of CQ

Based on Thomas et al. (2008) there are three dimensional CQ facets (knowledge, skills, and metacognition); Thomas et al. (2012) has developed a composition of a single second-order factor along with the three first-order facets in order to operationalise CQ through measurement tool via a web-based solution to facilitate the adoption of multiple assessment approaches (Ott and Michailova 2016). The adoption and utilisation of this tool were limited, as argued by (Thomas et al. 2015) due to its complexity despite the fact that this tool is demonstrating good reliability and validity. In response to this challenge, Thomas et al. (2015) established a reliable scale of CQ named by the Short Form Cultural Intelligence (SFCQ). They have introduced the 10-items scale along with a five-point Likert scale, where higher CQ could be indicated by a higher score achieved in the SFCQ.

To validate the SFCQ scale; Thomas et al. (2015) first distinguished the CQ from the emotional intelligence and individual personality just like other scholars, for example, Ang et al. (2007) because “these non-academic intelligences are cultural constrained and do not transfer across the cultural spectrum” as stated by Solomon and Steyn (2017). Second, they also showed the positive correlation of the CQ with multicultural experience indicators, and at the same time, they have demonstrated the negative correlation between CQ and ethnocentrism. Finally, Thomas et al. (2015) argued that CQ as a construct has the capability to predict significant outcomes for the intercultural effectiveness that are and not limited to “sociocultural adaptation, the development of long-term relationships with culturally different others, job performance in a multicultural environment, and the ability to make accurate causal attributions for crosscultural interactions”.

It is worth to mention that SFCQ validation has been examined by many scholars who have approved the construct validity like Thomas et al. (2015). However, more tests are required to assure the validity and efficiency measures provided by the SFCQ new scale.

5.3.3. CQ Construct Final Version

There are two primary scales to measure the CQ; the first one is the Cultural Intelligence Scale (CQS) that has been developed by Ang et al. (2007). The second one is Short Form Cultural Intelligence (SFCQ) that has been developed by Thomas et al. (2008) to measure (knowledge, skills, and metacognition). There are other scales to measure CQ that have been developed by scholars through generating new facets from merging the Ang et al. (2007) four facets into two facets like Bucker et al. (2015). On the other hand, some scholars considered Thomas et al. (2008) three facets as one dimension and developed SFCQ which “indicate that cultural intelligence is a single latent factor reflected in three intermediate facets” as concluded by Thomas et al. (2015).

Motivation is playing a significant role in the empowerment as stated by many theories and scholars like Rappaport (1984), Zimmerman and Rappaport (1988), Thomas and Velthouse (1990), Zimmerman (2000), and Uzunbacak, (2015). Also, Motivation is considered as a crucial element for creativity and innovation adoption and success as proved by many scholar like Gardner (1993), Amabile (1997), Rogers (2003), Zhou (2006), Aulawi et al. (2009), Townsend (2013), Anderson (2014) and Hero et al. (2017). Furthermore, Motivation is playing a significant role as it is related to individuals intentions to overcome their frustration or confusion and continue working in a cross-

cultural environment (Bucker et al. 2015). They also added that motivation is an essential dimension to measure CQ in a multicultural environment that is included in Ang et al. (2007) but “is missing from other instruments”. Based on these facts, Ang et al. (2007) conceptual four facets CQS (Metacognition, Cognition, Motivation, and Behavioural) will be adapted to measure the CQ in this research context.

Starting with recalling Motivational CQ “represents a capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences” as stated by Bucker (2015). Individuals with high motivational CQ have confidence in their cross-cultural effectiveness, higher task performance, and “direct attention and energy toward cross-cultural situations based on intrinsic interest” as concluded by Ang et al. (2007). Individual high level of self-efficacy as a result of achieving high motivational CQ level as posited by (Ng and Early 2006).

Behavioural CQ “reflects the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures” as stated by Ang et al. (2007). They also added “Those with high behavioural CQ exhibit situationally appropriate behaviours based on their broad range of verbal and nonverbal capabilities, such as exhibiting culturally appropriate words, tone, gestures and facial expressions”.

Metacognitive CQ “focuses on higher-order cognitive processes, cognitive CQ reflects knowledge of the norms, practices and conventions in different cultures acquired from education and personal experiences” as stated by Ang et al. (2007). Individuals with high metacognitive CQ

have the capabilities to reflect on their own and other cultural assumptions and develop cultural skills and knowledge through the engagement in a multicultural environment (Ang and Van Dyne 2008).

Cognitive CQ “knowledge structures and is consistent with Ackerman’s (1996) intelligence-as-knowledge concept, which argues for the importance of knowledge as part of the intellect” as stated by Ang et al. (2007). Individuals who have high cognitive CQ understand the similarities and differences in a multicultural environment (Brislin et al. 2006).

According to Ang et al. (2007), the developed conceptual model to measure the CQ “posits differential relationships between the four CQ dimensions (metacognitive, cognitive, motivational and behavioural) and three intercultural effectiveness outcomes (cultural judgment and decision making, cultural adaptation and task performance in culturally diverse settings)”. Based on Ang et al. (2007) finding for the developed twenty items cultural intelligence scale (CQS), they have shown that the “metacognitive CQ and cognitive CQ predicted cultural judgment and decision making; motivational CQ and behavioural CQ predicted cultural adaptation; and metacognitive CQ and behavioural CQ predicted task performance” in their selected sample from the United States of America and Singapore. So, CQS reliability, stability, and validity have been proven in Ang et al. (2007) empirical study, also, showing that “specific dimensions of CQ have differential relationships with cognitive, affective and behavioural intercultural effectiveness outcomes”.

The construct of Cultural Intelligence and its measurement instrument CQS developed by Ang et al. (2007) are widely used by many scholars in Human Resources Management (Wu and

Ang 2011), International Management (Kiznyte et al. 2015), and Social Psychology (Ng et al. 2012). Also, CQ and CQS were tested in many studies and shown that CQ structure is clear, robust, meaningful, and always stable across selected samples, time, and countries (Ang and Van Dyne 2008). Furthermore, Ang et al. (2007) in their three cross-validation samples and studies that provided “strong empirical support for the reliability, stability and validity of the CQS and demonstrate that specific dimensions of CQ have differential relationships with cognitive, affective and behavioural intercultural effectiveness outcomes”. These findings are proposing the following hypotheses:

H4a₁: Cultural Intelligence is associated with the Innovation outcomes in the Public Sector related to Effective Leadership.

H4a₂: Cultural Intelligence is associated with the Innovation outcomes in the Public Sector related to Innovation Adoption.

H4a₃: Cultural Intelligence is associated with the Innovation outcomes in the Public Sector related to Organisation Performance and Effectiveness

H4a₄: Cultural Intelligence is associated with the Innovation outcomes in the Public Sector related Adjustments that enhance job performance, practices, and adjustment.

H4a₅: Cultural Intelligence is associated with the Employee Psychological Empowerment (EE)

H4a₆: Cultural Intelligence is associated with Employee Behavioural Empowerment (BE).

H4a₇: Cultural Intelligence is associated with Social and Structural Empowerment (CE).

However, scholars like Bucker et al. (2015) through their empirical test to the CQS as an instrument to measure CQ have questioned the validity of studies and the limitations in both sample

and test discriminant validity. According to Buckner et al. (2015), “the samples used in most CQ studies tend to consist of respondents with little cross-cultural experience”, and they added that such limitation “could threaten the validity of their results” as the used sample “most of their experiences involved vacations, which contribute less to cross-cultural learning than do work or study abroad experiences”. These arguments were supported by empirical research like Ramalu et al. (2010), and Imai and Gelfand (2010) where CQ requires effective functioning in a diverse environment, experience in multicultural engagement, international experiences, and length of stay abroad. On the other hand, Buckner et al. (2015) reported that “many validation studies fail to report tests of discriminant validity of the four dimensional structure of the CQS, despite the moderately high to high intercorrelations across dimensions”. Lack of discriminant validity might lead to create multicollinearity and not support the model of measurement “due to problems of construct and discriminant validity resulting from multicollinearity between value types” as stated by Perrinjaquet et al. (2007).

To conclude the findings, there are two main conceptualised scales for measuring Cultural Intelligence, namely Cultural Intelligence Scale (CQS), and Short Form Cultural Intelligence (SFCQ). Both scales received empirical support and tests by many scholars who have proven the reliability and validity of these scales across the sample, time, and countries where the test was conducted. The recent empirical studies like Buckner et al. (2015) provided conditions and enhancement of the CQS instrument that is widely used by many scholars. The new conceptualised model of two dimensions ICK intelligence (cognitive and metacognitive) and ECF intelligence (motivational and behavioural) along with twelve questions that have been developed and tested by Buckner et al. (2015) looks promising and fit for the purpose of this research. Hence, the evolved

hypotheses based on the below Bucker et al. (2015) remain the same of the seven previous one as the new CQ conceptualisation is hybrid dimensions from CQS and SFCQ with restrictions on the targeted sample.

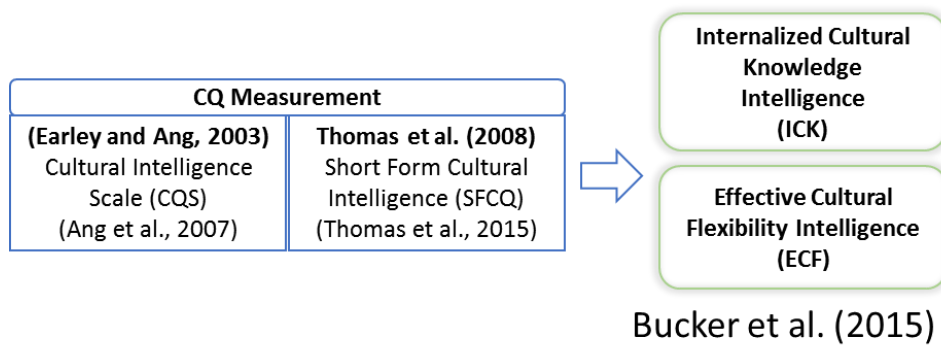


Figure (13) Cultural Intelligence for Bucker et al. (2015)

5.3.4. Conclusion of Cultural Intelligence Construct

CQ is playing a significant role in increasing innovation opportunities through the interactions of the multicultural working environments that also include public sector higher education providers. The influence of CQ is considered critical at organisation, leadership, management, and employees' levels towards adjustment, adaptation, performance, effectiveness, cross-cultural leadership, openness, extraversion, and innovation adoption. Also, the external environment culture is playing a significant role in innovation adoption and implementation. On the other hand, the CQ notion will be adopted into the research conceptual framework as a moderator and mediator to meet the research requirements without losing the CQ core concept. Also, by having CQ within the conceptual framework, the unique and proven CQ outcomes

(Adjustment and Adaptation, Performance and Effectiveness, and Cross-Cultural Leadership) were utilised to enhance the emergence of innovation outcomes in the public sector.

5.4. Emergence of Innovation Construct

In this section, the emergence of innovation will be introduced and connected to the public sector innovation outcomes. The aim is to develop a conceptual and tangible measure for the emergence of innovation by linking its purpose and need to identified innovation outcomes in the public sector. In doing so, this research is bringing the emergence of innovation to the public sector context in order to facilitate the public organisational innovativeness through becoming the right environment for innovation to emerge.

5.4.1. The Emergence of Innovation Phenomena and its Agents

Based on the research in the literature of individual empowerment, cultural intelligence, and innovation adoption, development and implementations, and emergence theory; the construct of the emergence of innovation will be constructed. The emergence of innovation is a phenomenon that requires many agents to fit each other perfectly and at the same time, work in harmony through specific conditions to produce the assumed result. Also, the emergence of innovation requires a trigger or a motivator (purpose) that is a combination of need and acceptance in order to start the innovation process. Furthermore, the emergence of innovation requires a unique environment that is customised for its incubation and generation that also require inventive ideas and processes to

accommodate the ideas newness needs and impacts. This research presumption of the emergence of innovation definition is in the case of having a creative idea that has the potential for execution. More details on this construct and its components will be provided in the upcoming paragraphs.

Creativity is the origin where novel and unique ideas came from (West and Farr 1996) and (Rank et al. 2004), while innovation is an inventive system where useful creative ideas translate into reality and tangible outcomes like process, service, or product that is new in all means (Zhou and Shalley 2008), (Paulus 2002), and (Fagerberg et al. 2005). Innovation emerged as a response to “motivation” or “mandate” from individuals (person, organisation, government, or market) to adhere to a “need” that might be raised by individuals, group, organisations, community, or market (local or global) to create a value that enhance people life or to keep the organisational competitive advantage or both (West 1990), (Humphreys 2006), (Van Alstyne and Logan 2007), and (Toivonen and Tuominen 2009). The motivators or mandates that cause the emergence of innovation are economic growth (Kanter 1995) and (John 2012), enhance human well-being (Maton 1988), global and local market aggressive competition (Berry 1994) and (Foroudi et al. 2016), customers needs (Lee et al. 2012), government demand (Barry 2012) and (Rohman 2014), financial constraints (Laschinger et al. 2004), organisations strategies (Stander and Rothmann 2010), allocating resources (Perkins and Zimmerman 1995) and (Mendoza-Sierra et al. 2014), revenues and profitability enhancement (Groot and Budding 2008), augment performance effectiveness and efficiency (Lee et al. 2014), adapting and adopting industry and technology revolution (Bekkers and Homburg 2005), cultural perspective (Zhou and Su 2010), and business continuity (Zimmerman 2000) in innovation-driven future.

This enhancement or new solution generation (innovation-system) become authentic through transforming a novel knowledge (the creative idea) into new service, process or product to meet people, organisations, community, and market needs and aspirations. The creative idea that is used to innovate the solution should have the capability of execution to be adopted. Novel ideas might be generated from several resources like individuals with unique intellectual abilities and knowledge, analysis and discussion of a team of experts, artificial intelligence, linking creative ideas to generate simple solutions, and other lateral resources including learning from peers and competitors. However, there is a need to focus on how to translate the creative idea into a new product, process, or service rather than investigate how to generate them. The most crucial action that organisations have to make is to facilitate successful innovation through empowering individuals who have creative ideas that anticipate future opportunities to address the “need”. Then, place them in the innovation system (where resources are allocated and supported by the expert team) to incubate and develop the “accepted” solutions (outcomes) by individuals (employees and customers), group, organisations, governments, community, culture, and the market.

This type of successful innovation that produces accepted outcomes might be Incremental, Radical, Sustaining, Breakthrough, Architectural, or Disruptive, depending on many innovation antecedents. These antecedents are and not limited to the need nature (Toivonen and Tuominen 2009), the creative idea ease of use (Sarooghi 2015), individuals capacities and experiences, adopted business models (Kieffer 1984), market segmentation (Ford 1996), innovation diffusion strategy (Rogers 2003), society and government rules and regulations (Edquist 2005) and (Bloch and Bugge 2013), organisations strategies (Rohman 2014) along with allocated resources (Anderson and West 1998), and innovation risk acceptance (Borins 2001) and (Townsend 2013).

Furthermore, the emergence of innovation requires “Innovation Agents” (Schumpeter 1942) to create the incubation environment and ensure the success of the solution development and implementation. Accordingly, Innovation eight agents are: Creative idea that has the innovative capacity to be executed (Damanpour 1991), Empowered individuals (Uzunbacak 2015) with high CQ (Earley and Ang 2003), Team of experts from diverse domains (Anderson et al. 2014), Organisation to host innovation (Zimmerman 2000), Community regulations (Edquist 2005), Technology (Walker 2014), Market (Schumpeter 1930), and Time (Rogers 2003).

In conclusion, innovation emerges when innovation agents at a micro-level work in synergic interactions. Such synergy forms a particular organisation of functioning the correlations between the independent innovation agents. The differentiation and integration of innovation agents that interact in the synergy process will produce a synthesise solution as a response to a need and a purpose for the enhancement that is considered the emergence of the innovation. On the other hand, for Innovation to emerge; it should evolve within an integrated system that host the innovation development and accept its outcomes at both micro and macro levels. The claim in this research is that empowered individuals with high CQ level will create the required synergy for innovation to emerge in a dynamic interaction between micro and macro levels to produce the needed solution. On the other hand, innovation might also emerge as a result of trial and error for developing a solution to a particular problem, and might also open the door to use the solution in many other fields.

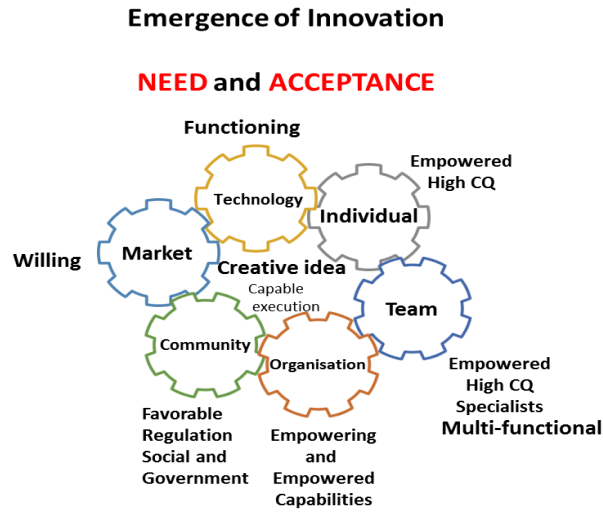


Figure (14) Emergence of Successful Innovation Construct

Based on this literature review, the emergence of innovation is a complex and highly demanding phenomenon that requires a unique platform to host many resources. At the same time, this platform should be integrated and synchronised in a way to work in harmony and in a productive way. Also, this innovation paradigm should be supported by raised needs and acceptance from all concerned persons, community, organisations, government, and market to produce the required outcomes. Hence, for innovation to emerge, a new idea should be available, and then, planted in the right environment where all vital elements are available to support the solution growth. For example, nature creates conditions that are sometimes considered radical, and species who have a purpose like breeding starts adapting to these conditions to survive. In other words, when a motivation (purpose) meets a particular need, creative idea, individuals with a wealth of intelligence, management support, multifunctional expert team, hosting organisation, community regulations, willing market, and working technology that all considered as innovation conditions that should all be uniquely sized to facilitate innovation system production.

There is no standard way to innovate as each need case is exclusive and following a unique business model. However, innovation research and development should be part of the organisation strategy (customer-based) and take place in a model of the supply chain where all organisation departments who have partial knowledge related to a specific field are working coherently and in an integrated way to manage and maintain the innovation paradigm. Taking into consideration that many organisation resources are from outside the organisation like consultants or manufacturing, cultural intelligence role became essential for empowering the whole innovation system through collaborative and open innovation.

5.4.2. Innovation Outcomes in the Public Sector

Innovation outcomes as defined by Kuipers et al. (2013) are “substantive results of the implementation of an innovation that can be intended or unintended and positive or negative”. In the public sector, the positive innovation results are mainly focusing on Process, Product, or Service with increasing efficiency and effectiveness (Dias and Escoval 2013). In general, the innovation outcomes for public service providers, including education, comprise of product, services, process, customer satisfaction, Private Partners Involvement, citizen involvement, fairness, safety, efficiency and effectiveness (De Vries et al. 2016). These primary organisational outcomes of successful innovation in the public sector are considered crucial when establishing the purpose that leads to the emergence of innovation. Such defined purpose in the public sector will create the need to meet the required outcomes that are considered the motivation for empowered innovators in the public sector to start bringing the components at the micro level to create the right

environment for innovation to emerge. By establishing the required and desired interlinks between the eight innovation agents (Creative idea, Empowered individuals with High CQ, Team from diverse domain experts, Organisation, Community, Technology, Market, and Time), empowered innovators who also possess high CQ will lead the innovation adoption and generation all the way through reaching the primary organisational outcomes. On the other hand, the personal motivations of the empowered innovators who also possess high CQ are considered covered in the empowerment facet were all their needs are accommodated, so they will have a clear focus on interlinking the components and creating successful paradigms that facilitate the emergence of successful innovation.

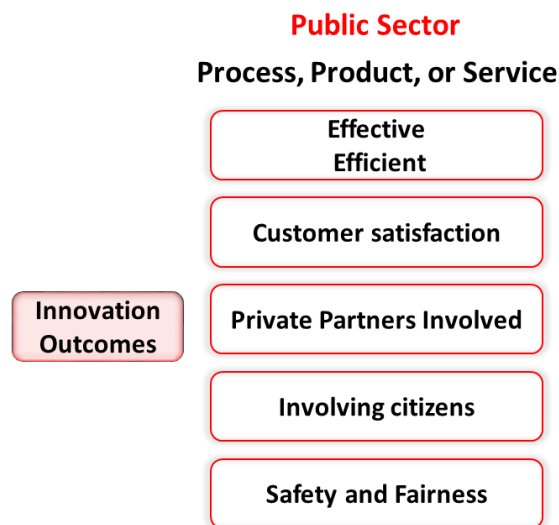


Figure (15) Innovation Outcomes in the Public Sector

5.4.3. Conclusion of the Emergence of Innovation in the Public Sector Construct

For innovation to emerge, there should be a “need/purpose” for enhancement and an “acceptance” from organisations, communities, markets, and customers. This need and acceptance lead to hiring creative ideas and empower innovative individuals with high CQ to work in an innovation system hosted by an organisation that accepts the risk and offers resources to facilitate innovation and develop the right technology to execute it. The outcomes of innovation should be accepted by communities (legislation, regulations, policies, traditions ...etc.), markets, and customers as a new value that enhances people life and keeps the competitive advantage for the organisations. Innovation adoption takes time to be accepted by users depending on the idea originality and the created impact on lifestyle. There is no way to measure the emergence of innovation, as it is not tangible. However, the creation of the right environment for the eight innovation agents could be possible by employing and empowering innovators who possess high CQ, and they will take the lead in formulating these eight agents towards the identified innovation outcomes in the public sector, which is presumed to result in creating successful solutions. So, this research reached to the level of defining and measuring the emergence of innovation phenomena through the impact of its innovation outcome within the public sector context. In other words, the occurrence of the emergence of innovation will be considered happening in the system produced tangible innovation outcomes.

5.5. Integrated Research Conceptual Framework

Through building the research three main constructs, namely the Employee Empowerment, Cultural Intelligence and the Emergence of Innovation, many interlinks between empowerment and cultural intelligence and the emergence of innovation were founded. Also, individual empowerment and cultural intelligence are completing each other as interlinked components that have more links together towards the emergence of innovation and successful outcomes. Such links encouraged to assume the below roadmap for the research as a conceptual framework that robustly links the defined three constructs.

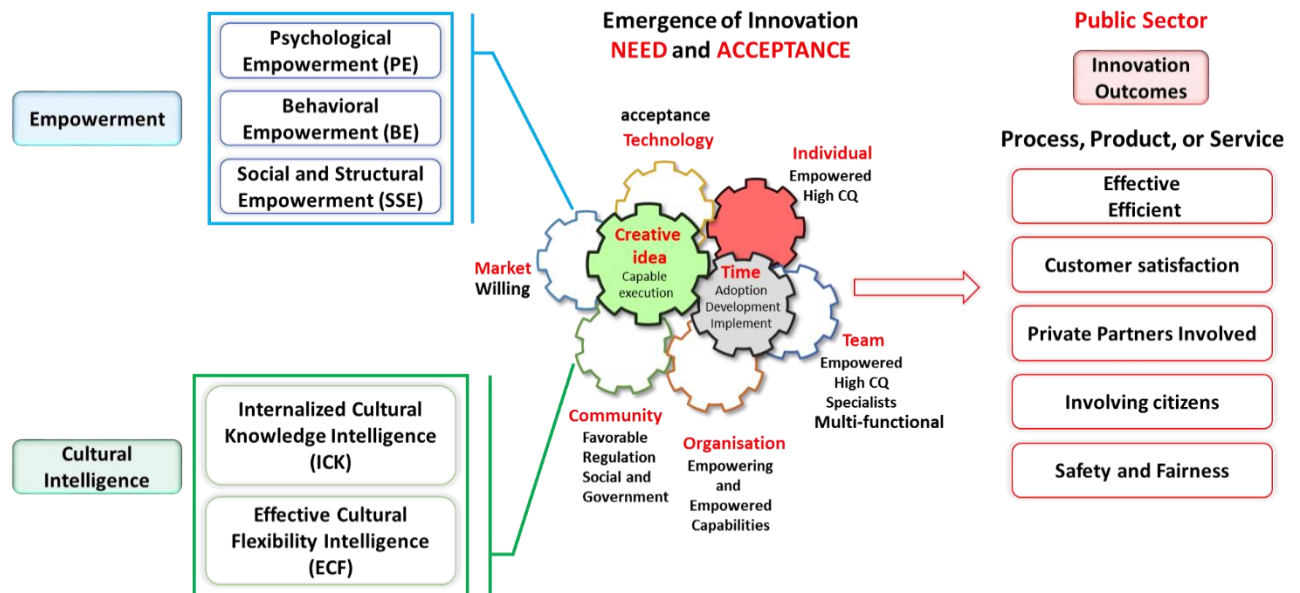


Figure (16) Proposed Research Conceptual Framework

However, due to the complexity of measuring the three constructs and their interlinks with innovation outcomes in the public sector; the research conceptual framework has been redefined to introduced hybrid dimensions of the Emergence of Innovation Drivers (EID), Emergence of Innovation Outcomes (EIO), and Cultural Intelligence (CQ) as a mediator and as a moderator. For Emergence of Innovation Drivers, there are two main factors: the first one is the Innovation Human Drivers (Employee Empowerment, Line Manager Support, and Board of Innovation Provision). The second factor is the Innovation System Drivers (Organisation Behaviour, and Environment Readiness) that are considered the host were innovation incubate, developed, and implemented. For the Emergence of Innovation Outcomes, the focus was on Customer satisfaction, Process, Product, Service, Effectiveness and Efficiency. Finally, the Cultural Intelligence effect as a moderator and as a mediator will influence the Emergence of Innovation Drivers (Human and System) towards achieving better Emergence of Innovation Outcomes. The integration for the factors of the three research notions (Employee Empowerment, Cultural Intelligence, and Emergence of Innovation Outcomes) is proposing the following hypotheses:

H1c₁: Employee Empowerment (EE) is associated with the Emergence of Innovation Outcomes in the Public Sector.

H1c₂: Line Manager Support (LMS) is associated with the Emergence of Innovation Outcomes in the Public Sector.

H1c₃: Board of Innovation Provision (BIP) is associated with the Emergence of Innovation Outcomes in the Public Sector.

H1c₄: Innovation Human Drivers (IHD) as a whole construct is associated with the Emergence of Innovation Outcomes in the Public Sector.

H2a₁: Organisation Behaviour (OB) is associated with the Emergence of Innovation Outcomes in the Public Sector.

H2a₂: Environment Readiness (ER) is associated with the Emergence of Innovation Outcomes in the Public Sector.

H2a₃: Innovation System Drivers (ISD) as a whole construct is associated with the Emergence of Innovation Outcomes in the Public Sector.

H3a₁: Emergence of Innovation Drivers (EID) as a whole construct is associated with the Emergence of Innovation Outcomes in the Public Sector.

H4b₁: Cultural Intelligence influences the association between Employee Empowerment (EE) and the Emergence of Innovation Outcomes in the Public Sector.

H4b₂: Cultural Intelligence influences the association between Line Manager Support (LMS) and the Emergence of Innovation Outcomes in the Public Sector.

H4b₃: Cultural Intelligence influences the association between the Board of Innovation Provision (BIP) and the Emergence of Innovation Outcomes in the Public Sector.

H4b₄: Cultural Intelligence influences the association between the Innovation Human Drivers (IHD) as a whole construct and the Emergence of Innovation Outcomes in the Public Sector.

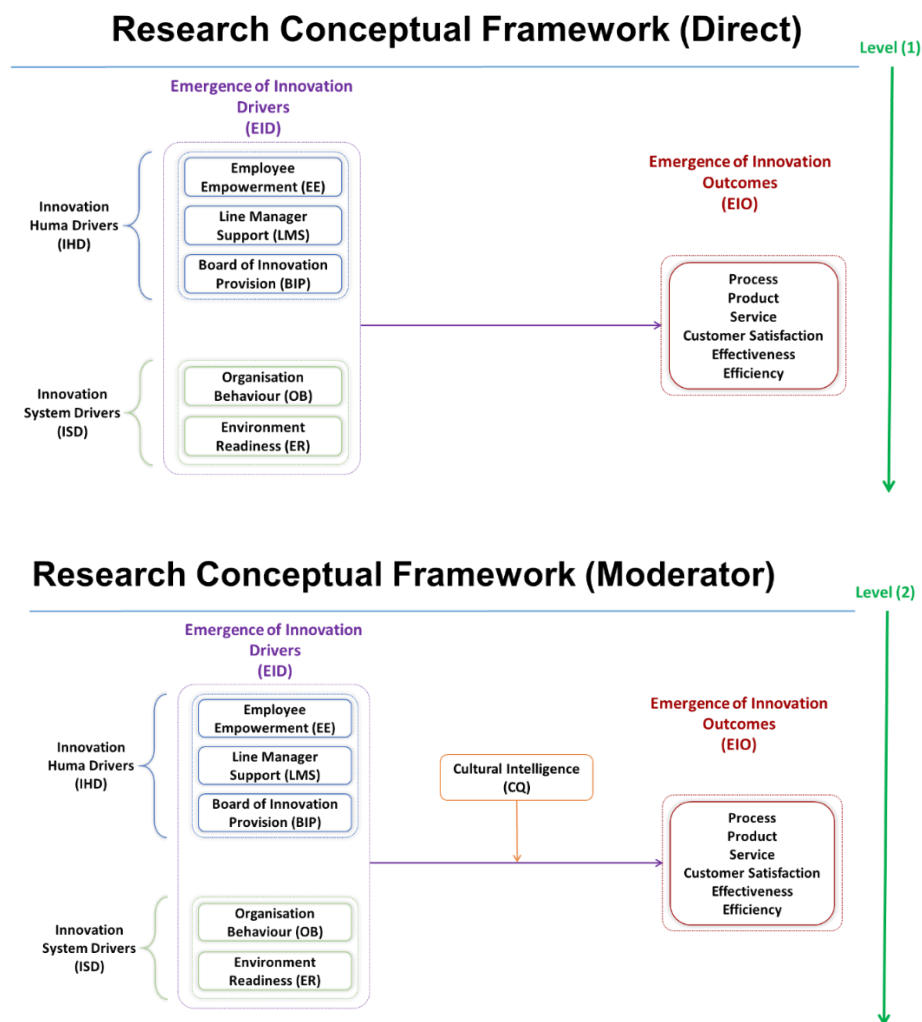
H4b₅: Cultural Intelligence influences the association between Organisation Behaviour (OB) is and the Emergence of Innovation Outcomes in the Public Sector.

H4b₆: Cultural Intelligence influences the association between Environment Readiness (ER) and the Emergence of Innovation Outcomes in the Public Sector.

H4b₇: Cultural Intelligence influences the association between the Innovation System Drivers (ISD) as a whole construct and the Emergence of Innovation Outcomes in the Public Sector.

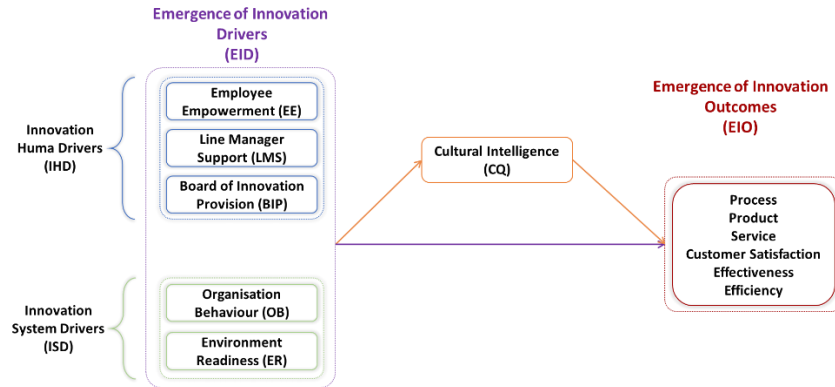
H4b₈: Cultural Intelligence influences the association between the Emergence of Innovation Drivers (EID) as a whole construct and the Emergence of Innovation Outcomes in the Public Sector.

Based on that, below the Research Conceptual Framework is considered as the final version that including three levels of direct effect, moderator effect, and mediator effect.



Research Conceptual Framework (Mediator)

Level (3)



19

Figure (17) Final Research Conceptual Framework (three levels)

The final research conceptual framework presented in figure (17) was developed to connect the identified emergence of innovation drivers along with the emergence of innovation outcomes in public sector higher education services providers. These connections have been created following the object-based method that requests the survey respondents to answer business practices within their working environment. Based on that, this study is measuring perceptions of innovation outcomes in the public sector higher education service providers. Also, the CQ moderator and mediator effect were used to influencing the relations between the independent and dependent variables.

5.6. Summary of Research Conceptual Framework

Innovation in the public sector requires an innovation ecosystem to become the right environment for innovation to emerge. This ecosystem consists of: a creative idea that has a purpose to meet the needs and a possibility for execution, time for adoption, empowered individuals

to adopt, collaborative management for support and resource allocation, experts from several fields for innovation provision, hosting organisation, a market for execution and measurement, a community for regulation and consumption, CQ, and technology for development and execution. Conclusively, Emergence of Innovation Drivers (Human Drivers and System Drivers) that are influenced by the cultural intelligence was hypothesised in this research to create such public sector innovation ecosystem that presumed to increase the Emergence of Innovation opportunities toward measurable outcomes (Customer satisfaction, Process, Product, Service, Effectiveness, and Efficiency). Innovation has its benefits to support public sector higher education providers to reinventing this sector to meet the current and future market and community needs. Hence, the developed Innovation Ecosystem would provide a conceptual understanding of what type of system that the public higher education providers should adopt to increase the emergence of innovation within this sector.

The next chapter (Research Methodology) been developed to systematically and comprehensively address the research problem and develop a tool to investigate and validate the proposed hypotheses between human innovation drivers, innovation system drivers, and the emergence of innovation outcomes in the public sector and eventually answer the research questions.

6. CHAPTER SIX: RESEARCH METHODOLOGY

6.1. Introduction

This chapter introduces and explains the research methodology used to pursue the study and investigate the assumed unidirectional relationships and associations between the defined variables in the research conceptual framework. Also, this chapter is structured to provide the research outline, philosophy, approach, methodology, time horizon, technique and procedures. In addition, this chapter compares the methods used in similar settings, as well as discuss the instruments, measures, targeted sample, questionnaire, ethical considerations, and limitations.

6.2. Research Outline

According to De Vries et al. (2016), Public Sector Innovation in the literature does not follow general research paradigms that could be utilised as a reference. The same applies to the empowerment and innovativeness, as there are several research perspectives (Uzunbacak 2015). Also, the emergence and design of innovation are complex phenomenon (Van Alstyne and Logan 2007) that also follow the same case as the other previous notions. In addition, there are several CQ conceptualisations along with numerous scales presented in the literature (Ott and Michailova 2016). However, the “Research Onion” taxonomy by Saunders et al. (2016) provides an acceptable level of synthesis by having primary research principles, as shown in Figure (18). In this context, “The research onion provides a rather exhaustive description of the main layers or stages which are

to be accomplished in order to formulate an effective methodology” (Raithatha 2017) as cited by Melnikovas (2018). Hence this research follows the research onion.

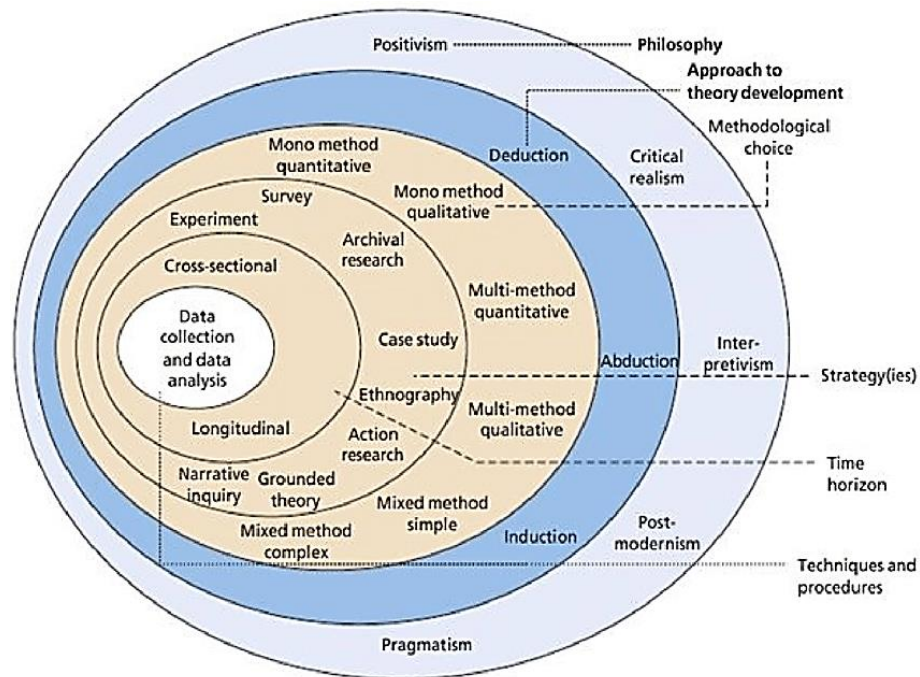


Figure (18) Research Onion by Saunders et al. (2016)

It is worth to mention that another research paradigm is founded in the literature is the “Research Journey” provided by Mackenzie and Knipe (2006), as shown in Figure (19).

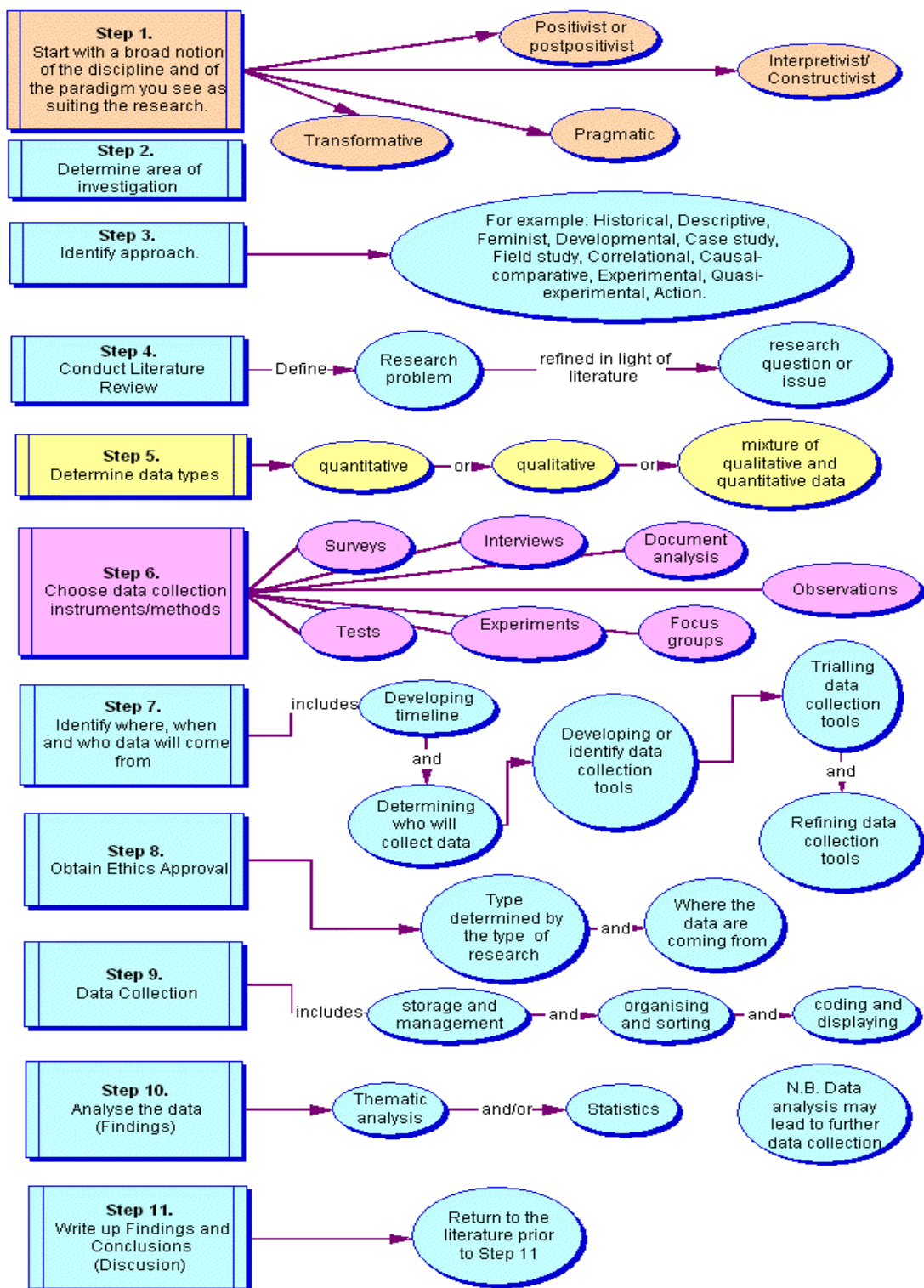


Figure (19) Research Journey by Mackenzie and Knipe (2006)

6.3. Research Philosophy

According to Neville (2007), research philosophy is the type of research approaches used with the purpose of knowledge creation and the manifestation of the data via scientific literature utilisation in accordance with mutual philosophical approached as follows:

- **Positivism:** Experimentalist, Traditionalist, Objectivist, Scientific, or Quantitative.
- **Interpretivism:** Subjectivist, Humanistic, Phenomenological, or Qualitative.

In order to select between Positivism or Interpretivism research philosophical approaches, it is essential to consider the following. The design of this research was based on categorical and quantifiable defined variables in order to validate the research proposed hypotheses. Also, this research is investigating empowerment, cultural intelligence, and the emergence of innovation in the public sector setting (from an object-based perspective). Furthermore, human behaviour as a phenomenon is not controllable in a way to fall under district measures or observations due to the fact that individual responses may vary based on the type of the event using their own perspective, which creates a level of inconsistency. Finally, this research aims to minimise the possible researcher bias to generalise the findings in the way to contribute to the body of knowledge.

The core idea of Interpretivism philosophical approach as stated by Goldkuhl (2012), “is to work with these subjective meanings already there in the social world; i.e. to acknowledge their existence, to reconstruct them, to understand them, to avoid distorting them, to use them as building blocks in theorizing”. Also, Norrie (2006) added in the same context that an Interpretivism philosophical approach “will provide the more complete conclusion about what phenomenon is actually occurring and why in any particular context”. In other words, interpretivism often takes

multiple perspectives while recognizing the researcher's own viewpoint, which create a level of bias on behalf of the researcher, that eventually makes the generalisation of the findings questionable. Hence, following the Interpretivism philosophical approach might produce a finding that is confined to individuals behavioural aspects, which is not entirely in line with this research design.

On the other hand, Positivism philosophical approach is offering identification, measurement, and evaluation for any defined phenomena via establishing causal relationships between the defined variable under particular theory or practice (Neville 2007). Also, positivism research philosophy included “an emphasis on the scientific method, statistical analysis, and generalizable findings” in addition to “a control and experimental group and a pre/test post method” with an aim to approve or disapprove a hypothesis with possibility of generalising the findings as stated by Mack (2010). Furthermore, positivism's philosophical approach is offering rational explanations for causal relationships between several elements in a governmental setting (Norrie 2006). Finally, the positivism research approach is more in line with this research design and purpose in the way to test and validate the research hypotheses and contribute to the body of knowledge related to innovation in public sector higher education service providers. Hence, this research is adopting positivism research approach as a research philosophy.

6.4. Research Approach

This research reviewed the literature for the identified three notions (Empowerment, Cultural Intelligence, and the Emergence of Innovation) from generally related theories. Also, a narrowing

process took place in order to reach a specific setting related to public sector service providers with a focus on higher education. Furthermore, the established hypotheses validation is presumed to be through testing the quantitatively generated data from the developed questionnaire. Finally, this research is attempting to validate the developed hypotheses toward specific public sector context.

Concerning the Research Onion by Saunders et al. (2016), there are three conventional research approaches: deduction, abduction, and induction. Kudo, Murai and Akama (2009) defined these approaches starting from the deduction as a “reasoning process for providing a conclusion from a general rule and a condition that holds in the given typical situation”. They also defined induction as “a reasoning process for providing general rules from specific facts”. They also defined abduction as “a reasoning process for providing a hypothesis that explains a fact in the given typical situation”. Based on this research design and structure, the deduction research approach will be implemented.

6.5. Research Methodology

The definition of methodology in the literature vary, and the use of the terms methodology and method in sometimes is interchangeably or used as having a different meaning (Mackenzie and Knipe 2006). Research methodology has been defined in the Macquarie Dictionary (3rd Ed), as the “science of methods, especially: a. a branch of logic dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry”, and the second definition is “b. Education a branch of pedagogics concerned with the analysis and

evaluation of subject matter and methods of teaching” as cited in Mackenzie and Knipe (2006). This definition is more likely to be in line with the methodology defined in the literature in general (Scharm 2006).

Another definition of methodology describes it as a discipline and as a research-specific that was explained by Somekh and Lewin (2005) as “the collection of methods or rules by which a particular piece of research is undertaken”. They also defined the methodology as research-specific towards “principles, theories and values that underpin a particular approach to research”. As concluded by Mackenzie and Knipe (2006) “The most common definitions suggest that methodology is the overall approach to research linked to the paradigm or theoretical framework while the method refers to systematic modes, procedures or tools used for collection and analysis of data”. Hence, it can be concluded that the methodology is a comprehensive adoption of approaches that are in line with the theoretical research framework to undertake a particular piece of research, and method is the systematic processes and procedures that end up by developing a tool for collecting data and analyse to validate the research hypotheses and answer research questions.

In general, there are four main research methods used in the literature: the first one is Action Research. This method that is considered as an approach that requires the researcher continuous interventions for the studied case in order to “links research with interventions in practice, in a participatory way, whereas grounded theory develops theoretical knowledge – in this case characteristics – inductively and systematically derived from data” as defined by Waas, Verbruggen and Wright (2010). They also added that action research is “merging grounded theory

with the research part of action research, results in a more theory rigorous and powerfully improved action research”. The second method is Experimental Research that is defined as a systematic and scientific approach based on trial or comparative research through applying a high level of structure and control on the research variable in a structured environment (for example laboratories) in order to determine a causal effect of the condition towards providing better-quality findings (Konrath 2012).

The third method is the Case Study is used to examine complex phenomena in natural context by conducting “an intensive study about a person, a group of people or a unit, which is aimed to generalize over several units” as argued by Gustafsson (2017). Another definition for the case study is given by Woods and Calanzaro (1980) “as an intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables”. The fourth method is Survey Research, that is defined by Check and Schutt (2012) as “the collection of information from a sample of individuals through their responses to questions”. This type of research provides a level of freedom and flexibility to adopt a variety of methods in targeting audiences, collecting data, and the utilisation of instrumentation (Ponto 2015).

There is extensive use of the survey research method in the psychological research and social sciences as they could be utilised to describing or investigating the individual behaviour (Singleton and Straits 2009). Also, Survey method could follow the quantitative research methods like questionnaire, qualitative research strategies like open-ended questions, or mixed methods from the previous two approaches (Ponto 2015). Furthermore, survey as a research method supports

inductive and deductive approaches, and there are many research studies in the literature that concurrently use deductive and inductive approaches to balance perspectives and introduce a level of flexibility during validation or observation processes (Hyde 2000). Finally, the survey is divided into two primary types; the first one is the Descriptive Survey defined as “concerned with identifying & counting the frequency of a particular response among the survey group” as stated by Neville (2007). The second survey type, as defined by Neville (2007), is the Analytical Survey that aims “to analyse the relationship between different elements (variables) in a sample group”. Hence, selecting a method depends on the researcher interest in structuring the research, developing the instrument, and how the data is going to be collated and analysed.

This research is designed to investigate the relationships between the employee empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers, in addition to how significant contribution that those notions would provide in increasing the emergence of innovation opportunities. Also, this research is attempting to benefit from the survey methodology that is widely used in the social sciences to collect data as a straightforward method with bias control and generating the results. The quantitative method is covering a broader sample than the qualitative method in general, which is considered essential in this research to include more participants from several nationalities and cultural backgrounds. In the same context and based on the literature review related to innovation more specific in the public sector, this research is following a quantitative methodology approach to answer the research questions and test the hypotheses. The motive behind selecting this method was derived from the recommendation of De Vries et al. (2016) systematic review to invest in quantitative method along with cross-nation studies as there were fewer researchers following this approach, in addition to

the fact that survey method is more in line with this research framework. Also, this research is following object-based (focus on business practices) approach that is widely used in investigating the innovation in the public sector (Arundel, Bloch, and Ferguson 2016). The benefit from using this approach is “evaluating data for multiple innovations through the use of the object-based method or a ‘business practice’ method that asks survey respondents if their organisation had used any of a list of innovative practices or technologies” as emphasised by Arundel, Bloch, and Ferguson (2016). Hence, the survey research method will be followed in this research to validate the research proposition, and the targeted audiences will be from the public sector higher education service providers in the UAE.

6.6. Time Horizon

According to Saunders et al. (2016), the time taken to research phenomena is independent of the chosen research methodology, techniques, or methods. Also, there are two possible types of studies: cross-sectional studies that occur when there is time constraints and resources limitation. In the same context, these studies are used to collect data from several organisations at a single point of time to take a snapshot of an ongoing situation. On the other hand, the longitudinal studies are a type of research that investigates the same problem for the same situation or people at a different point in time. Also, these studies aim to study the dynamics of the identified problem and examine the change of the process to view the revealing stability of the phenomena and the emerging patterns. The presumed application of actions for this research is in line with the cross-sectional studies as it will conduct a survey at a single point of time targeting several higher

education providers from the public sector. However, there is a potential to extend this research to follow the longitudinal time horizon as a further investigation to take place in the future.

6.7. Technique and Procedures

According to Canals (2017), the methods used to gather data “are determined to a large extent by the research questions and objectives” and “is done in situations that try to reproduce real-life communication scenarios in which the participants make oral or written contributions that are useful for research purposes and, at the same time, beneficial for their learning process”. Also, several data collections technique like survey and interviews for individuals or groups are providing suitable processes for the researcher to collect data and information to answer the research problem. Furthermore, data collection methods vary in the degree of structure, quantifiability, obtrusiveness, and objectivity. Finally, the data collection methods depending on the research problem, identified research hypothesis, research design, and the type of information collated in relation to the identified variables.

When data is collated through the identified collection methods, the need to analyse them requires an understanding of the type of analyses that should be followed. Soiferman (2010) identified two distinct types of data analyses that are typically used in the research as “quantitative (deductive) and qualitative (inductive)” approaches with a level of disagreement amongst researchers on which is better approach to adopt as “these two methods are not mutually exclusive and often address the same question using different methods” as stated by Soiferman (2010).

Researchers in the Inductive or explanatory approach as defined by Creswell and Plano Clark (2007) “works from the ‘top down’, from a theory to hypotheses to data to add to or contradict the theory”, while researchers in deductive or confirmatory use “bottom up, using the participants’ views to build broader themes and generate a theory interconnecting the themes”. Qualitative research uses multiple constructed realities with researcher involvement, and then, employing the inductive reasoning to start from specific observations and measure via deducting themes and patterns towards forming tentative hypotheses with exploration that may result in creating general conclusions or theories (Soiferman 2010). On the other hand, quantitative research is using “a single reality that can be measured reliably and validly using scientific principles” as stated by Onwuegbuzie and Leech (2005) without researcher direct involvement, and then employing the deductive reasoning via statistical analysis to establish connections and test the significance of the relationships between the defined variable using descriptive or inferential statistics (Soiferman 2010).

This research follows the quantitative method and employing the deductive (confirmatory) approach suggested by Soiferman (2010) to analyse the data generated from the developed questionnaire in order to test the defined research hypotheses and conclude related and emerging findings. It is worth to mention here that there are many statistical software packages like SPSS that are designed for analysing quantitative data. This software connects the variables statistically and offers several types of tests that help in developing an informed decision on which hypotheses to accept or reject. SPSS was used in this research as the primary tool for data analysis.

6.8. Methods

For the primary three research approaches: Qualitative (inductive) Method, in general, is investigating phenomena through involving the researcher to start from observing specific participants' views, and then, create themes and patterns towards generalisation or creating theories using exploratory and predictions methods (Soiferman 2010). The second research approach is Quantitative (deductive) Method that does not require direct researcher involvement and statistically connecting the variable in a scientific setting to reliably and validly measure the founded relationships (Onwuegbuzie and Leech 2005). The third approach is Mixed Methods from the previous two methods, where the data is analysed quantitatively and qualitatively to facilitate the interpretations of the founded results (Ponto 2015). One of the benefits of mixed methods research came from the fact that "Purposeful data integration enables researchers to seek a more panoramic view of their research landscape, viewing phenomena from different viewpoints and through diverse research lenses" as stated by Shorten and Smith (2017).

As this research adopted a positivistic philosophy and deductive research design, it follows the recommendation from a systematic literature review conducted by (De Vries et al. 2016) and (Arundel, Bloch, and Ferguson 2016) to use the quantitative method for innovation in the public sector. In addition to the necessity of conducting this research in a cross-cultural setting as stressed by Bucker et al. (2015). This research uses the quantitative research method to test the defined research hypotheses and validate the relationships for the unidirectional connected variables in this research conceptual framework.

6.9. Instruments

There are two types that data collection methods depend on, the first one is “open-ended” questionnaire and the second one is “closed-ended” questionnaire, as explained by Roberts et al. (2014). They concluded that the advantages of the open-ended questions that provided the respondent’s point of view without limitations. Also, open-ended questions provide a nonreactivity by not directing the respondent through the defined cue. On the other hand, open-ended question may have concerns related to respondent’s level of understanding and experience in the field, challenging to be analysed, in addition to the limitation caused by the necessity of building a coherent response that provide a little frame of reference for the respondent (Roberts et al. 2014).

Closed-ended questions provide quantitative data analysis (Bryman and Bell 2015), considered as faster and easier to answer which encourage respondents to participate, easier for statistical analysis (Bryman 2015), and have proven statistical efficacy (Wu et al. 2015). On the other hand, closed-ended questions cue the respondent to think in the questionnaire direction, do not provide a space for the respondent to contribute in particular areas, and respondent with no relevant knowledge could answer anyway (Roberts et al. 2014). However, this research will use the closed-ended questionnaire method because of the advantages as mentioned above and will take into consideration the potential disadvantages.

Although quantitative approach might have the risk of low response rates, however, with appropriate questionnaire design, the selection of the targeted audiences, and with the hosting organisation's support would increase the number of the responses. Also, by following the

quantitative method, there is less personal interaction like the qualitative method that is considered as a disadvantage to this research. However, this bias weakness is covered in quantitative methods by the factual data that could be obtained from the responses with no bias and influence that could be practised by the interviewer (Soiferman 2010). Furthermore, a direct English language will be used only to avoid distraction and misrepresentation. Finally, the questionnaire will be supported by a cover letter that explains the aim of this questionnaire and encourages the participants to participate freely.

To the best of the author's knowledge, the literature lacks to have a complete instrument that would fully cover this research proposed conceptual framework and methods. This conclusion led the author to develop a suitable questionnaire to the best literature reviews related to the public sector higher education service providers in the way to accommodate the notions of the empowerment, emergence of innovation and culture intelligence to this research context. For the independent variables, namely innovation human drivers, innovation system drivers and CQ, the adopted model was based on the latest models used and empirically reviewed and supported in their field of research with customisation to link them to this public sector service providers context with more in-depth to the higher education setting. For the dependent variable namely the emergence of innovation in the public sector and due to its nature of complexity, a limitation on the measurement was implemented by considering the emergence of innovation phenomena accepted if it only produces the required identified outcomes. This contingency approach was adopted to avoid falling in the uncertainty of the emergence phenomena, and at the same time, mitigate possible risk in bringing this concept into the public organisation rigid systems. Even

though this approach is creating a limitation, however, it is considered as an opportunity to further the research in this particular area in the future.

This research questionnaire was developed in a digital-based form and will be communicated to the targeted audiences via emails. Also, the institutional research unit from the targeted organisations will be utilised to use their formal channels to communicate this questionnaire within their organisations. In this way, it is expected to get better response rates because of following formal channels systems within research-based organisations. Below points provides more details related to the instrument development, deployment and data collection:

- The research survey was shared with three experts for enhancement and cover any unexpected event.
- The survey was developed through a digital survey tool and been communicated with the Research Units (RU) from the hosting organisations.
- The RU obtained the required internal permissions from the concerned departments and distributed this survey to the targeted sample.
- An internal email, including a cover letter and a link to the survey, was shared with all employees through RU to increase the number of the response.
- Survey questions came in a shape of separate consecutive lists that require answering all questions to move forward to the next list, with an option to exit the survey anytime.
- Survey participants have been given four weeks to complete the survey from the day of receiving it.

- The RU provided a weekly report on the responses and have sent three follow-up emails following three days frequency during the survey response timing.
- Participants responses have been collated by the survey tool and stored in Microsoft Excel Sheet
- All data have been prepared and entered into SPSS to be analysed as appropriate.
- Further investigations took place to discover the associations and other relations in the way to test the research hypotheses and answering the research questions.

The used online tool for conducting the survey was established in a popular website known as survey engine. There is an expected risk that might occur and form a challenge on several levels. However, the author developed a risk mitigation strategy, as shown in the below Table (2) to mitigate possible risks.

No	Risk	Mitigation
1	Technical problems with the online survey	<p>a) The email to the participant included:</p> <ul style="list-style-type: none"> • Participation request in the email body • Survey softcopy attachment • Survey Online link • Survey filling guidelines • Researcher contact details <p>b) Survey closing time extension to be taken into consideration</p>

2	Breach organisation confidentiality	<p>a) The organisation name was classified, and the result of this survey will be strictly used for this assignment only.</p> <p>b) The survey will be conducted without any trail of IP addresses so that anonymity will be guaranteed</p>
3	Breach individual privacy	There will be no participant name or tracker to avoid inconvenience and embarrassment
4	Delay in organisation response	<p>a) Before starting the survey:</p> <ul style="list-style-type: none"> • A discussion will take place with the hosting organisation to facilitate conducting this survey successfully. • An action plan with timeframe will be developed and agreed with the hosting organisation before conducting the survey. <p>b) During the survey</p> <ul style="list-style-type: none"> • Professional daily follow up • Readiness to provide help and support as required.
5	Data loss	<p>a) Use the reliable online survey tool database to recall the collected data.</p> <p>b) Store the result in two-three storage devices and on cloud service.</p> <p>c) Recover data loss from the storage device using specialised recovery software</p>

		<p>d) If there were no chance to recover the information, another survey would take place with the same organisations if they allow it, or another organisation will be approached.</p>
6	Completing the task within the targeted timeframe limitations	<p>a) Obtain supervisor approval on the survey</p> <p>b) Create a list of potential organisations to participate in this survey in case of failure response from the targeted hosting organisations.</p> <p>c) Start communicating with the organisations to promote the survey and encourage them to participate</p> <p>d) Get the organisation's approval to take part in this survey.</p> <p>e) Take into consideration all mentioned risks to develop timeframe with a contingency plan</p>

Table(2) Risk and Mitigation

6.10. Instrument Validity and Reliability

According to Taherdoost (2016), “The main objective of questionnaire in research is to obtain relevant information in most reliable and valid manner”. Based on that, Taherdoost (2016) emphasised on the fact that “the accuracy and consistency of survey/questionnaire forms a

significant aspect of research methodology which are known as validity and reliability”. The validity, as defined by Field (2009), is to “measure what is intended to be measured”. Also, validity describes to which level the collated data could cover the actual area that the research is intending to investigate (Gauri and Gronhaug 2005). On the other hand, Reliability is related to the type of measurement for certain phenomena that produce stable and consistent results (Carmines and Zeller 1979). Also, reliability focuses on the scale or test repeatability by providing similar results when repeating the measurement under constant conditions (Moser and Kalton 1989). Both validity and reliability could be tested via specialised software like SPSS that this research is adopting.

6.11. Measure

Based on the literature review, the author will develop a suitable questionnaire where the independent and dependent variables will follow the adopted research method as appropriate. The aim is to collect relevant data to the defined variables in the way to analyse and test them. All questions in the developed questionnaire will be answered on a scale of five-point Likert scale where five represents strongly agree (or very likely), and one represents strongly disagree (or very unlikely). On the other hand, the eight demographic questions will include a multiple-choice option to ease the answer selection.

6.12. Sample

In order to implement the research in the right environment that having its representative components, and based on the literature recommendations, the author chooses the public higher education providers in the United Arab Emirates (UAE). This selection came from the fact that there are many reforms taking place within this sector and innovation is considered as a norm and necessity for all of the higher education service providers. One of UAE uniqueness is the fact that it is a multicultural environment with merit. Also, the targeted higher education providers are operating all over the country with several industry sectors that influence them. Furthermore, the targeted sample includes a mixture of Faculty and Administrative Staff from several nationalities and management levels as their job roles and responsibilities are connected and influencing each other. Finally, at the beginning of this questionnaire, there is an introduction that includes an appreciation for participation, an overview of the research objectives and expected outcomes, and justification on the importance of this research subject.

This research is following the Simple Random Sampling (SRS) method to conduct this questionnaire taking into consideration the targeted demographics and their influence on this survey outcomes. According to Thompson (2013), SRS approach is a subset of a statistical population with equal opportunities for the participants to be chosen. Also, SRS is considered as an unbiased representation as the chosen participant were selected with equal probability and randomised control that offers full freedom for the audience to participate or decline, which creates, in general, a balanced subset that with high potential representing the whole group. Furthermore, when the randomly selected sample is representing the whole group by satisfying the whole

targeted demographics, the room for error would be minimised. Finally, as there is a challenge to know the number of employees in the public sector, higher education providers; though the SRS method is commonly used in such situations, and will be adopted in this research as convenience to select the random sample following (Pimenta et al. 2015) and (Martínez-Mesa et al. 2016):

- Define the targeted population: this research is targeting those who are working in the UAE public higher education providers; mainly five organisations.
- Identify the demographics that is best describing those who are working in higher education.
- Utilise the research units in the targeted public sector higher education service providers who have a full list of their employees to randomly target the identified demographics making sure that all categories were represented.
- Randomly selecting those respondents with the completed survey that representing all categories in the demographics taking into consideration to make the selection large as possible.

6.13. Research Structure and Data Analysis

The structured research approach is shown in Figure (20) been developed to guide the research efforts in each identified stage in order to follow a consistent process towards achieving the research objective and outcomes.

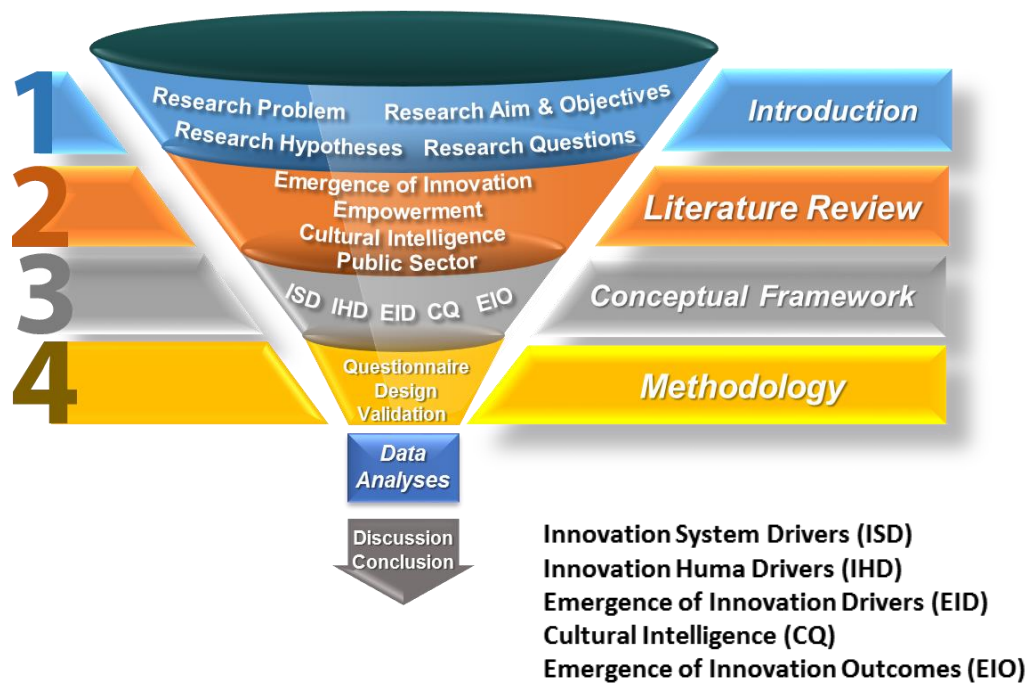


Figure (20) Research Structure and Data Analysis

This research followed Positivism Philosophy, Research Onion Approach, Survey Methodology, Deductive/Confirmatory Technique and Procedures, and Quantitative Methods that led to developing a closed-ended questionnaire as an instrument to generate quantitative data related to the research conceptual framework. Statistical studies and analyses through SPSS relevant tests will take place on the collated data to test the presumed associations between the defined independent and dependent variables in the way to validate the research hypotheses, answer research questions, and generate conclusions.

6.14. The Questionnaire

The purpose of the developed research questionnaire is to benefit from the quantitative research methodology and method that provides data in forms of quantities which help in

generating a general understanding of the variables connections and how to formulate information from the obtained responses. Based on this understanding, the questionnaire will be used to answer the research questions and test the developed hypotheses. Also, based on the results, prediction equations will be developed based on the findings and concluded results when applicable.

The main questionnaire contents are the demographics, independent variables, and dependent variable. For the independent variables, the latest models used were adopted, empirically reviewed and supported in their field of research. For the dependent variable and due to its nature of complexity, a limitation on the measurement been implemented by considering the emergence of innovation phenomena measured if it only produces the required identified outcomes. This contingency approach was adopted to avoid falling in the uncertainty of the emergence phenomena and mitigate possible risk in bringing this concept into the public organisation rigid systems. Even though this approach is creating a limitation, however, it is considered as an opportunity to further the research in this particular area in the future.

6.14.1. Measuring Innovation Human Drivers (The First Independent Variable)

The model of measuring empowerment developed by Uzunbacak (2015) that was based on Zimmerman (2000) model with integrated facets for better variable loading is going to be adapted and adopted in this research as empowerment dimension. Uzunbacak (2015) three empowerments facets are Psychological Empowerment (PE) related to individuals. Behavioural Empowerment (BE) related to managers and leadership, and the integrated Social and Structural Empowerment

(SSE) that is related to the organisational internal and external management style, strategies, sharing authority and communication.

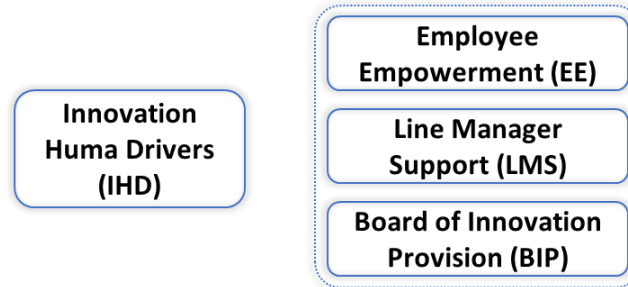


Figure (21) Measuring Innovation Human Drivers

To construct the first independent variable for this research, namely Innovation Human Drivers, this research adopted two facets from Uzunbacak (2015) model (PE & BE) and modified them to suit the research approach. PE as a facet was reconsidered, modified in public sector higher education context, and renamed by Employee Empowerment (EE). In order to measure this facet, ten questions been selected and modified from Spreitzer (1995), Spreitzer (1996), and Uzunbacak (2015).

The second facet BE has also been modified to fit in public sector higher education service providers context, and renamed by Line Manager Support (LMS) that focuses more on the line manager leadership and resources allocation. In order to measure this facet, seven questions been selected and modified from Dobbs (1993), Kanter (1993), King and Ehrhard (1996), Cacioppe (1998), Niehoff et al. (2001), Robbins et al. (2002) and Laschinger (2004) as cited in Uzunbacak (2015).

The third facet Team of Experts were added to this model as enhancement and remained to be Board of Innovation Provision (BIP), which has been brought to this variable as one of the success factors that support achieving innovation outcomes in the public sector service providers. In order to measure this facet, six questions been selected and modified from West (1990), (Woodman et al. 1993), (Zhou 2006), (Hulsheger et al. 2009), (Stahl et al. 2009), (Anderson et al. 2014), (Sarooghi 2015), and Uzunbacak (2015).

The first independent variable, namely Innovation Human Drivers (IHD) been constructed by integrating the Employee Empowerment (EE), Line Manager Support (LMS), and Board of Innovation Provision (BIP). To measure IHD, the collated twenty-three questions came with a five-point Likert scale where five represents strongly agree, and one represents strongly disagree that requires the respondent to choose from for each question.

6.14.2. Measuring Innovation System Drivers (The Second Independent Variable)

To construct the second independent variable, the third facet from Uzunbacak (2015) (SSE) was adopted and modified to introduce two facets: Organisation Behaviour (OB) and Environment Readiness (ER). For OB, the aim is to accommodate and facilitate the innovation through resources and infrastructure allocating, engage with the development process, and accept the incorporated risk. To measure the OB, eleven questions were selected and modified from Spreitzer (1997), (Weber 1947), (Rappaport 1981), (Conger and Kanungo 1988), Kanter (1993), (Zimmerman and Warschausky 1998), (Zimmerman 2000), (Orgambidez-Ramos and Borrego-Alés 2014), (Chandan 2015), (Glenn 2017), and Uzunbacak (2015).

For Environment Readiness (ER), the aim is to bring the Community regulations alignment from Social and Government perspectives into the innovation solution prior, during, and after implementation. To measure (ER), six questions were selected and modified to scale this notion used from (Dahl 1961), Spreitzer (1997), (Berger and Neuhaus 1977), (Rappaport 1981), (Rappaport 1984), (Simon 1994), (Zimmerman and Warschausky 1998), (Zimmerman 2000), (Edquist 2005), (Adams 2008), John (2012), (Barry 2012), and Uzunbacak (2015).

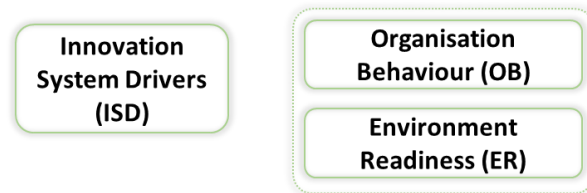


Figure (22) Measuring Innovation System Drivers

The second independent variable, namely Innovation System Drivers (ISD) been constructed by integrating Organisation Behaviour (OB) and Environment Readiness (ER). To measure the independent ISD, the collated seventeen questions came with a five-point Likert scale where five Very likely, and one represents Very unlikely that requires from the respondent to choose from for each question.

6.14.3. Measuring Cultural Intelligence (Acting as Moderator and Mediator).

Based on the fact that most of studies validation rely on the sample with limited overseas experience and few of these studies provided discriminant validity, Bucker et al. (2015) developed

a reconceptualised two-dimensional CQS model to measure CQ with twelve questions utilising the CQS scale satisfactory psychometric properties, reliability, and discriminant validity. Also, they used a homogeneous sample who have extensive overseas experiences with a multicultural environment. Furthermore, they have combined the two facets cognitive and metacognitive CQ into one dimension with seven questions and name it by “internalized cultural knowledge intelligence (ICK intelligence)”. Finally, they have combined the two facets motivational and behavioural into one dimension with five questions and named it by “effective cultural flexibility intelligence (ECF intelligence)” evolved from Earley and Ang (2003), Ang et al. (2006), Ang et al. (2007), Thomas et al. (2008), Thomas et al. (2015), and Bucker et al. (2015). However, in this research, this notion has been integrated into one modified hybrid notion to fit in the public sector higher education model, named by CQ, and came with seven questions with five-point Likert scale where five represents strongly agree, and one represents strongly disagree.

6.14.4. Measuring Emergence of Innovation Outcomes (the Dependent Variable)

According to the research in the literature review related innovation in the public sector, most of the studies highlighted innovation outcomes through Efficient and Effective Process, Product, or Service in addition to customer satisfaction and involvement in innovation development and implementation. To develop the EIO notion, the innovation outcomes in the public sector influenced by the innovation drivers (human and system) and CQ were collected and modified to create the notion of the Emergence of Innovation and led to develop this unique notion with seventeen questions were selected and modified to scale this notion used from Schumpeter (1934), Schumpeter (1942), Simmonds (1986), March and Olsen (1989), Damanpour (1991), Goldstein

(1999), Rogers (2003), Weber et al. (2004), Carter and Belanger (2005), Humphreys (2006), Deguet et al. (2006), Rickles et al. (2007), Van Alstyne and Logan (2007), Toivonen and Tuominen (2009), Damanpour and Aravind (2011), Bekkers et al.(2011), Uzunbacak (2015), and De Vries et al. (2016). This notion questions came with a five-point Likert scale where five represents strongly agree, and one represents strongly disagree.

**Emergence of Innovation
Outcomes
(EIO)**



Figure (23) Measuring Emergence of Innovation Outcomes

The below Figure (24) provides an overview of the questionnaire variables.

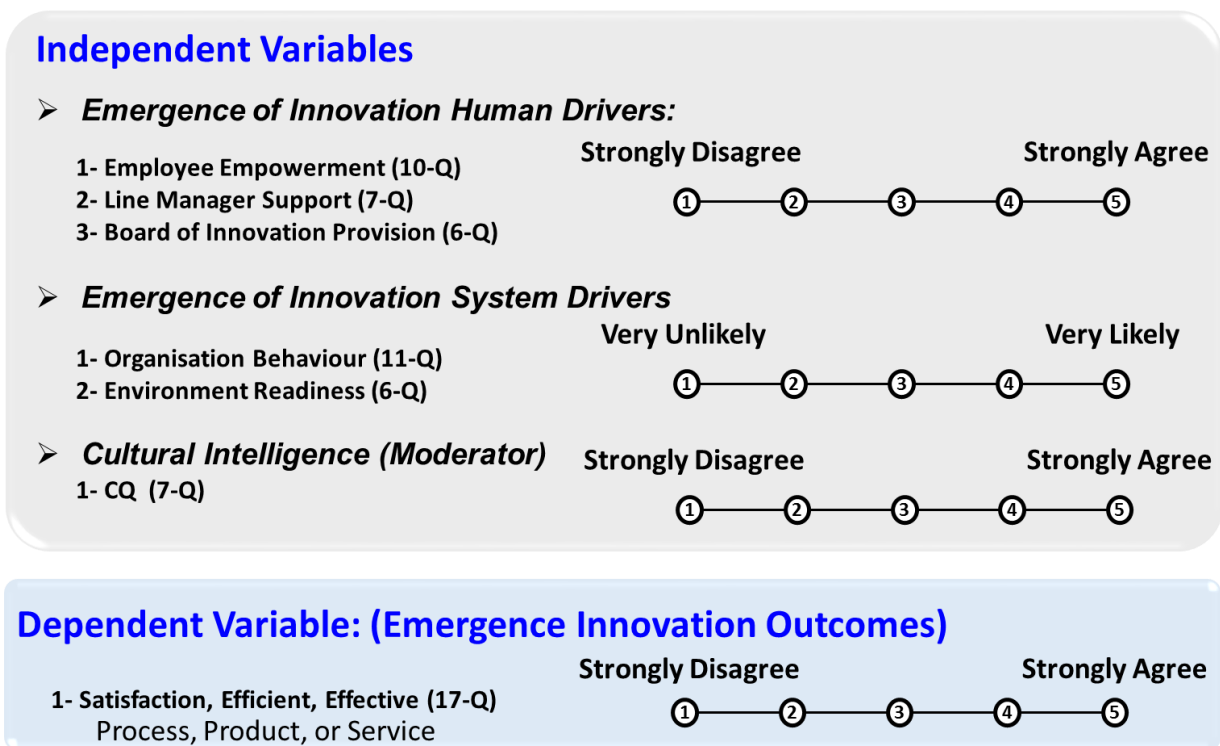


Figure (24) Survey questions overview

6.14.5. Demographics

To have a better knowledge of the targeted sample and based on the literature review, the focus here will be on the Location, Position, Region/Nationality, Experience, Age, Education Level, Job Level, and Marital Status as shown in the Table (3) below. The main aim of having these categories is to ensure the diversification of the selected sample in order to consider it representable.

1	Work Location	<input type="checkbox"/> Al Dhafra	<input type="checkbox"/> Al-Ain	<input type="checkbox"/> Abu Dhabi	<input type="checkbox"/> Dubai	<input type="checkbox"/> Sharjah	<input type="checkbox"/> Ras Al Khaimah	<input type="checkbox"/> Fujairah
2	Region/Nationality	<input type="checkbox"/> Middle East	<input type="checkbox"/> Africa	<input type="checkbox"/> Europe	<input type="checkbox"/> Asia	<input type="checkbox"/> North America	<input type="checkbox"/> Latin America	<input type="checkbox"/> Pacific
3	Gender	<input type="checkbox"/> Male				<input type="checkbox"/> Female		
4	Age	<input type="checkbox"/> 30 or less		<input type="checkbox"/> 31-39	<input type="checkbox"/> 40-49		<input type="checkbox"/> 50-59	<input type="checkbox"/> 60 or more
5	Years of Experience in Higher Education	<input type="checkbox"/> 1 or less		<input type="checkbox"/> from 2-4	<input type="checkbox"/> from 5-7		<input type="checkbox"/> from 8-10	<input type="checkbox"/> 11 or more
6	Education Level	<input type="checkbox"/> PhD	<input type="checkbox"/> Master	<input type="checkbox"/> Bachelor	<input type="checkbox"/> Diploma	<input type="checkbox"/> High School		<input type="checkbox"/> Other
7	Job Position and Level							
	<input type="checkbox"/> Academic Cadre		<input type="checkbox"/> Management			<input type="checkbox"/> Teaching		
	<input type="checkbox"/> Administration Cadre		<input type="checkbox"/> Senior Management		<input type="checkbox"/> Middle Management		<input type="checkbox"/> Frontline Management	
8	Marital Status	<input type="checkbox"/> Single		<input type="checkbox"/> Married		<input type="checkbox"/> Divorced	<input type="checkbox"/> Widowed	

Table (3) Demographics

6.15. Pilot Study

Pilot study as a term used in the social sciences has two distinct meanings; the first one is a feasibility study where “small scale version[s], or trial run[s], done in preparation for the major study” as defined by Polit et al. (2001). The second one is considered as running a pre-testing or “trying out” of the research instrument, as concluded by Baker (1994). However, when defining the term pilot studies, they refer to “mini versions of a full-scale study (also called ‘feasibility’ studies), as well as the specific pre-testing of a particular research instrument such as a

questionnaire or interview schedule” as stated by Teijlingen and Hundley (2002). They also added “Pilot studies are a crucial element of good study design” and are “important functions and can provide valuable insights for other researchers” in the way to support the research success through avoiding potential problems that might occur.

In this research, a pilot study for the questionnaire took place as follows: first, the questionnaire been sent to two researchers for validation and feedback. The second step, the questionnaire been modified based on the feedback and sent to another researcher for feedback and validation. The third step, the questionnaire been modified and sent to one of the universities research units for validation, feedback, and acceptance. Finally, and based on the research unit feedback and recommendations, the questionnaire been modified and came to its final version that was used in this research. Before sharing the questionnaire, a test took place by sending the questionnaire link to selected persons to test the acceptability and ease of use for using the provided digital questionnaire and answering the questions. Based on that, the questionnaire was accepted and accordingly shared with the targeted public sector higher education providers.

6.16. Ethical Consideration

With reference to Cobanoglu and Cobanoglu (2003), “the field of ethics, also called moral philosophy, involves systematising, defending and recommending concepts of right and wrong behaviour”. For the research context, ethics was defined by Resnik (2011) as “a method, procedure, or perspective for deciding how to act and for analyzing complex problems and issues”. He also

added that “Many different disciplines, institutions, and professions have norms for behaviour that suit their particular aims and goals” that support individuals to discipline their activities and actions with the defined ethical norms. Hence, researchers should be sensitive to the ethics of the surrounding community in addition to the formed codes of ethics from related authorities.

Recently, the use of online surveys within educational research has witnessed a significant growth (Berk 2012), due to the fact that online surveys comparing with paper-based one is considered preferred by many users (Roberts and Allen 2015). To conduct a survey, there are ethical duty and manner that should be taken into consideration starting from respect participant autonomy, confidentiality, and informed consent (Kelley et al. 2003) in addition to privacy and anonymity (Roberts and Allen 2015). As recommended by (Andrews, Nonnecke, and Preece 2003), there is a need to increase survey credibility and perceived legitimacy through acquiring a third party guarantee like a recognised institution. Also, potential risk and limitations should be detailed in addition to the process of protecting the confidentiality of the participants (Hessler et al. 2003). This means that the researcher might come to a situation during the research that requires to practice a sense of distinguishing between acceptable and unacceptable behaviour using the followed ethics as the norms of conduct to coordinating research-related activities.

In this research, the followed quantitative method been adopted as it may impose more ethical creditability as fewer interventions from the researcher will take place. While it seems that the qualitative studies require to pay more attention to ethical concerns as higher personal interactions play a significant role in such research approach. However, any research approach should follow and perform the highest ethical consideration when conducting research. On the other hand,

informed consent was created and used through data collection activity as required. This consent made to preserve the participant rights, confidentiality (This confidentiality means that neither organisation nor participants names will be used or tracked in this study, and the results will be analysed anonymously, anonymity, privacy, and freedom in participating in the questionnaire and withdraw anytime. Also, the research aim was introduced and explained to the participants with clarity on the pure academic purpose of the sole usage of the collated data in this direction. Furthermore, the researcher has signed the research ethics forms that are issued by the university to increase the questionnaire credibility and perceived legitimacy. Finally, all these steps took place to maintain the research ethics and keep it up to the highest standards, in addition, to preserve the participant rights and encourage them to participate in this questionnaire voluntarily.

It is essential to mention that this research is targeting higher education providers from the public sector that add a level of sensitivity on mentioning organisations name in the publications. Such practice should follow related formalities to acquire prior approval from each targeted organisation before publication commencement. Here, the researcher has two options; the first one is anonymity through using a codification for the organisation's named without any indicator that leads to recognise it, which be more likely to be followed in this research. The second option is to acquire the related approvals to use the organisation name when the permission is granted. Finally, the researcher ensures that the accepted research followed practices will always be adopted, and the results and found conclusions in this research will not be used to create any harm for the participants and their organisations.

6.17. Limitations

In general, any research study produces limitations due to the constraints related to the research field, approach, design, structure, and adopted methodologies that are considered as opportunities to further the research in these identified limitations. Also, many questions could arise in each research stage that requires further investigation, which is a typical of research and does not undermine the research values that also are considered another opportunity to further the research. Here, the researcher acknowledges methodological limitations due to the nature of the study field within the public sector, as will be mentioned in the following paragraphs.

This research aim is to investigate the influence of employee empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers. In this context, there is a noticeable lack of relevant empirical studies in the literature that are tackling similar research topics in the public sector higher education setting; this is in addition to having more tendency to qualitative rather than quantitative research method. Also, there is a level of newness arising from bringing and associating the notions of employee empowerment, cultural intelligence, and the emergence of innovation to public sector higher education context, which led to suggest a new research topology to accommodate this concept that is considered as a contribution to the body of knowledge. Furthermore, the targeted public sector higher education service providers form a challenge to reach participants and maximise the response rates in addition to granting permission to publish the research results, which limits the generalisation ability to a certain level. Moreover, the used language in the questionnaire was based on simple English language influenced with technical and sometime strategical terminologies that might form a

challenge for the non-native speaker in addition to those from another knowledge field. Finally, even though UAE is considered a multi-cultural country with merit, conducting the questionnaire within the chosen demographic group from the UAE is considered a limitation from having a better understanding of the research problem in a broader scope by including public sector higher education from other countries. The author is considering all the limitations mentioned above are offering unique opportunities to further the research within these identified areas.

6.18. Summary of Research Methodology

Through this chapter, the suitability of the chosen positivism philosophy was proven, and the appropriateness of the research design, methodology, and method were consistent with the research aim. Such cohesive research deductive structure has led to bringing the general theories into three particular areas of empowerment, cultural intelligence, and the emergence of innovation in public sector higher education service providers context. Also, the questionnaire was developed as the primary research instrument to collect data in the way to test and validate the research hypotheses and answer the research questions.

The collated data from the research questionnaire will be presented in the next chapter using the SPSS suitable tests to validate this research hypotheses and eventually answering this research questions.

7. CHAPTER SEVEN: DATA ANALYSIS

7.1. Introduction

This chapter has been structured to analyse and discuss the collated data using the research developed instrument. The chapter starts with Descriptive Statistics followed by demographics, Common Method Variance, Reliability, Normality, Frequencies Analysis, and Hypothesis Testing through Correlation and Regression. All mentioned statistical tests have been carried out using the SPSS (Statistical Package for Social Sciences) software from International Business Machine Corporation (IBM). Since 1986, SPSS was used widely in research as this software has proven the ability to operate complicated statistical tests (Ann 2011) and (Field 2009).

This research aims to investigate the statistical relationships shown in the conceptual framework. The design of the followed quantitative research is ensuring the validity and expected generalisation of the founded results from the population selected sample (Saunders, Lewis and Thornhill 2016). Based on the developed survey method, the collated survey responses were quantitatively studied and analysed to investigate the interdependence of causes of variation through the association between Innovation Human Drivers, Innovation System Drivers, and the Emergence of Innovation Outcomes taking into consideration CQ as an influencer (moderator or mediator) for such associations.

7.2. Descriptive Statistics

This section provides an overview of the selected sample from a demographic perspective. The main aim of these statistics is to ensure having a variety of the participants as such diversification is sensitive to the conceptual framework selected variables, especially for the cultural intelligence facet. Also, the targeted sample should reflect the typical higher education community from the public sector in order to be considered representative. The survey was designed in the format of an online solution, and its hyperlink has been generated and shared via email to the randomly selected audiences from public universities in the United Arab Emirates.

Around 217 employees from the public higher education providers accepted to participate in this survey, and after four weeks of following up, 162 completed the survey. The completion rate of the survey is around 75% which is considered as an acceptable percentage in this research as it follows Simple Random Sampling (SRS) (Thompson 2013), and the rest responses were disqualified. Based on the literature review, the carefully selected demographic categories are: Work Location, Region/Nationality, Gender, Age, Years of Experience in Higher Education, Education Level, Job Position and Level (Academic Cadre, Administration Cadre), and Marital Status. The results are represented in the below pie charts:

7.2.1. Gender:

The total number of females was 75 (46%), and the total number of males was 87(54%), which indicate a balanced sample from a gender perspective. So all categories were

represented in this category in the way to support the sample variety and similarity to the public sector higher education

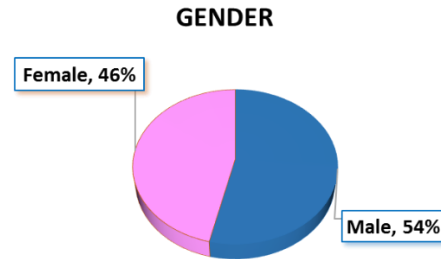


Figure (25) Gender

7.2.2. Work Location:

The survey was conducted in the United Arab Emirates where the number of Abu Dhabi participants is 72 (44%), Dubai = 34 (21%), Fujairah = 22 (14%), Sharjah = 19 (12%), and Ras Al Khaimah = 15 (9%) which means the collated responses from several locations as planned. So all categories were represented in this category in the way to support the sample variety and similarity to the public sector higher education

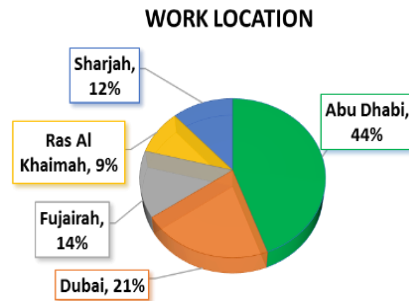


Figure (26) Work Location

7.2.3. Region/Nationality:

In this section, the collected responses from all over the world nationalities. Middle East responses numbered 76 (47%), Europe 31 (19%), Asia 28 (17%), North America 14 (9%), Africa = 6 (4%), Pacific = 5 (3%), and Latin America = 2 (1%). The variety of responses is considered as a strengthening point in this research as getting opinions and experiences from all over the world significantly supports the multicultural concept embedded in this research. So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

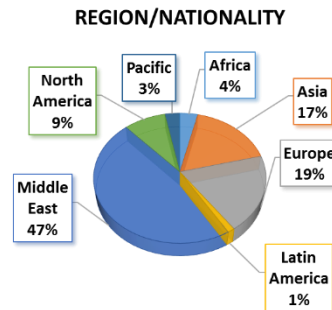


Figure (27) Nationality

7.2.4. Age

The largest age category responses is (40-49) years with number of participants 60 (37%) followed by (31-39) = 45 (28%), then (50-59) = 32 (20%), before the last (30 or less) = 14 (9%), and finally (60 or more) = 11 (7%), which means we have responses from all targeted categories. So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

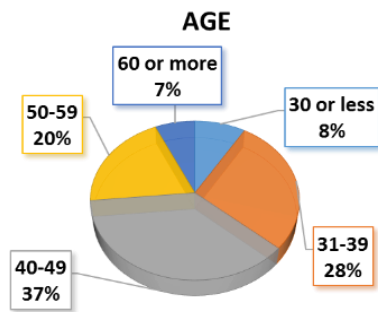


Figure (28) Age

7.2.5. Years of Experience in Higher Education:

Most of the participants were experts in higher education possessing experience of (11 years or more) with a number of 76 participants (47%); the second category is (2-4) years = 30 (19%). Both categories (5-7 years) and (8-18) scored (14%) with 22 and 23 participants respectively. Finally, the category of (1 year or less) came last by 11 (7%). The high number of experts in higher education who participated in this survey provides a level of strength to this selected sample. So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

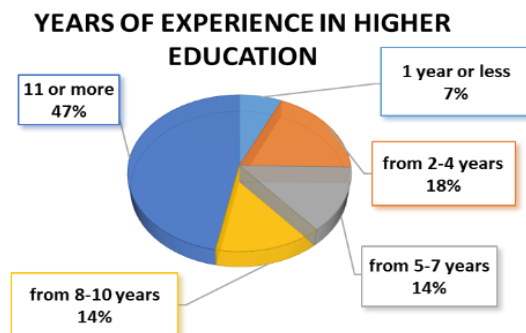


Figure (29) Years of Experience in Higher Education

7.2.6. Education Level:

Master degree participants number = 74 (46%) was the highest with almost half of the sample. The PhD degree holders = 53(33%), which forms one-third of the sample. Bachelor degree = 31(19%) with one-fifth of the sample. Diploma =2 (2%) and High School =1 were the lowest numbers of participants with 2% and 1% respectively. Such educational level variety will contribute to this research outcome. So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

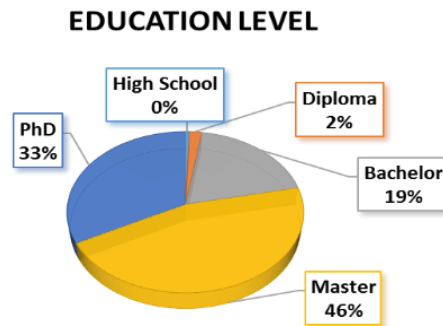


Figure (30) Level of Education

7.2.7. Job Position and Level:

Having responses from all the targeted categories was critical. More than half of the participants were from Academic Teaching Faculty = 85 participants (52%). The middle management administrative staff responses = 30 (18%). The front line administrative staff = 22 came on the third level (14%). Finally, the Academic Management = 14 (9%) and Senior Administrative Management = 11 (7%). So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

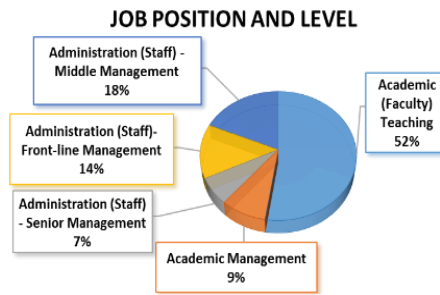


Figure (31) Job Position and Level

7.2.8. Marital Status:

In this section, three-quarters of the participants = 119 (73%) were married. Singles came in the second level with one-fifth of the sample (19%). Divorced and Widowed were 9 (6%) and 3 (2%) participants, respectively. So all categories were represented in the way to support the sample variety and similarity to the public sector higher education

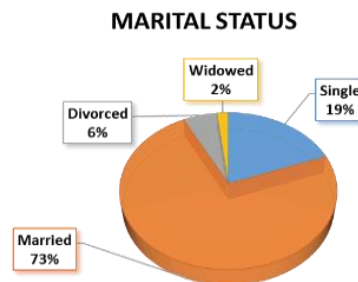


Figure (32) Marital Status

In summary, the demographics should be a reflection of the regular public sector higher education in order to be considered as a representative sample. Therefore, the provided

demographics in this research that were collated from the questionnaire are showing a contribution to all targeted categories, and this led to provide the variety and the required reflection as expected, taking into consideration the following Simple Random Sampling (SRS) method requirements that were fulfilled in this research sample.

7.3. Common Method Variance (CMV): Instrument Bias

The data were tested using Harman's single factor source in order to make sure that the total variance of one factor is not exceeding 50%. If the loading exceeds the 50%, this means the variation of the response is caused by the instruments rather than the predisposition of the respondents, which means that the instrument is introducing bias that inflating or deflating the relationship between variables (Conway and Lance 2010) and (Podsakoff, MacKenzie and Podsakoff 2012). By testing the initial eigenvalues greater with a score more than one, the result shows ten principal components having a loading more than one from the extracted responses and the first component rotation sums of squared loading is 21% < 50 %, which means that the used instrument does not produce bias.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	24.248	37.887	37.887	24.248	37.887	37.887	13.133	20.520	20.520
2	6.804	10.631	48.518	6.804	10.631	48.518	10.262	16.035	36.555
3	3.992	6.237	54.755	3.992	6.237	54.755	6.267	9.792	46.346

4	3.287	5.136	59.891	3.287	5.136	59.891	5.152	8.049	54.396
5	2.438	3.810	63.701	2.438	3.810	63.701	3.027	4.730	59.125
6	1.675	2.617	66.318	1.675	2.617	66.318	2.838	4.435	63.560
7	1.536	2.400	68.717	1.536	2.400	68.717	2.315	3.617	67.177
8	1.250	1.953	70.671	1.250	1.953	70.671	1.928	3.012	70.189
9	1.186	1.853	72.523	1.186	1.853	72.523	1.284	2.006	72.195
10	1.031	1.611	74.134	1.031	1.611	74.134	1.241	1.939	74.134
11	.972	1.519	75.653						
12	.904	1.413	77.065						
13	.864	1.350	78.415						
14	.777	1.215	79.630						
15	.739	1.155	80.786						
Extraction Method: Principal Component Analysis.									

Table (4) Data Total Variance

Illustration on the eigenvalues for the extracted components is provided in Figure (33) below

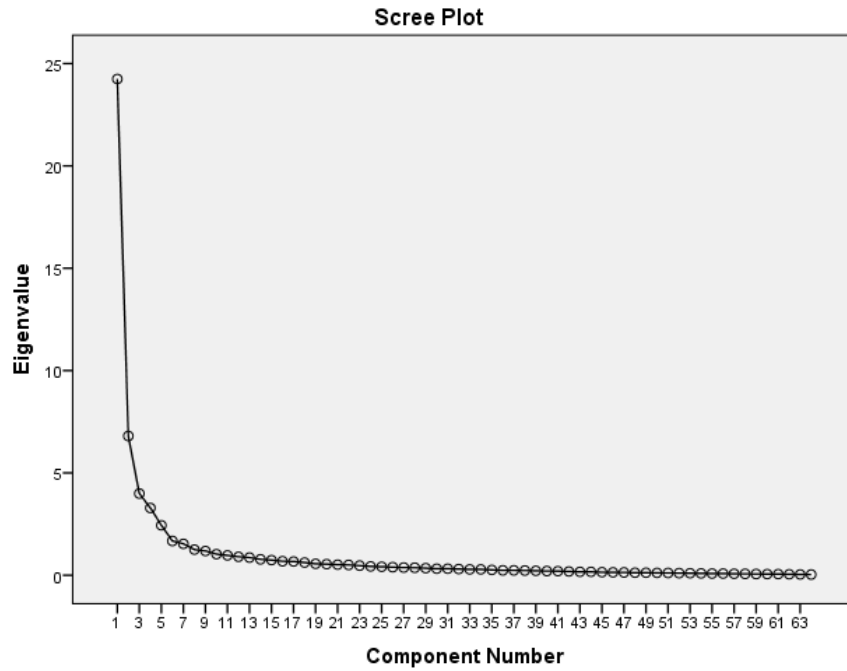


Figure (33) Scree Plot for the Eigenvalues

7.4. Reliability Analyses

For testing the research instrument for reliability, the Cronbach Alpha test that is using the formula $Alpha = \frac{n \times r}{(1 + (n-1) \times r)}$, where (n = number of items, and r = mean of correlations between al pairs) will be used. A score that is less than (0.7) is indicating the internal values of the common range is low that is not accepted in general, the score of (0.7) or more is indicating good reliabilty, and score of (0.9) is considered as the maximum accepted score, and in this research is accepting a score of (0.7) or more to investigate the longitudinal possibility of the selected variables (Fiels 2009). By running the reliability test, all the variables scored more than (0.7), which means that they are highly reliable as the collated data by the research instrument have captured a high level

of consistency, and the survey may measure the same variables in the same means at a different point in the time. Table (5) below provides scale reliability summary for each variable:

Reliability Test

No	Component	Number of Entered Items	Cronbach's Alpha
1	Employee Empowerment	10	.862
2	Line Manager Support	7	.934
3	Board of Innovation Provision	6	.936
4	Organisation Behaviour	11	.953
5	Environment Readiness	6	.875
6	Cultural Intelligence	7	.839
7	Emergence of Innovation Outcomes	17	.977
8	Innovation Human Driver	23	.937
9	Innovation System Driver	17	.955
10	Emergence of Innovation Drivers	40	.966
11	The global validity of the 64 factors	64	.972

Table (5) Reliability Test

For the next tests, the nomenclatures were used for this research's variables and their transformations to create coding for SPSS ease of entry and tracking, as shown in the below Table (6):

Code	Variable
EE	Employee Empowerment
LMS	Line Manager Support
BIP	Board of Innovation Provision

OB	Organisation Behaviour
ER	Environment Readiness
CQ	Cultural Intelligence
EIO	Emergence of Innovation Outcomes
IHD	Innovation Human Driver
ISD	Innovation System Driver
EID	Emergence of Innovation Drivers
EE_SR	Employee Empowerment Reflected Square Root
LMS_SR	Line Manager Support Reflected Square Root
BIP_SR	Board of Innovation Provision Reflected Square Root
OB_SR	Organisation Behaviour Reflected Square Root
ER_SR	Environment Readiness Reflected Square Root
CQ_SR	Cultural Intelligence Reflected Square Root
EIO_SR	Emergence of Innovation Outcomes Reflected Square Root
IHD_SR	Innovation Human Driver Reflected Square Root
ISD_SR	Innovation System Driver Reflected Square Root
EID_SR	Emergence of Innovation Drivers Reflected Square Root

Table (6) Nomenclature for variables

7.5. Normality Test for the independent and dependent variables

In testing the normality for the collated data (well-modelled by normal distribution) to be accepted for further investigation, the used method in this research is testing the skewness and

kurtosis for the accepted interval should be between ± 2.58 at 0.01 significance level or ± 1.96 at 0.05 significance level, and any value beyond that will be considered nonnormal Cramer (1998), Cramer and Howitt (2004), Hair et al. (2010), and Doane and Seward (2011). The below Table (7) provides the Kolmogorov-Smirnova and Shapiro-Wilk tests in addition to skewness and kurtosis values.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
EE	.088	162	.004	.962	162	.000
LMS	.119	162	.000	.923	162	.000
BIP	.144	162	.000	.943	162	.000
OB	.098	162	.001	.962	162	.000
ER	.082	162	.010	.970	162	.001
CQ	.127	162	.000	.954	162	.000
EIO	.180	162	.000	.873	162	.000
IHD	.092	162	.002	.959	162	.000
ISD	.102	162	.000	.968	162	.001
EID	.094	162	.001	.963	162	.000

a. Lilliefors Significance Correction

Table (7) Tests of Normality

Below Table (8) provide a summary of the variables Skewness and Kurtosis:

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
EE	-.715	.191	.376	.379

LMS	-.939	.191	.869	.379
BIP	-.569	.191	.928	.379
OB	-.640	.191	.101	.379
ER	-.628	.191	.781	.379
CQ	-.401	.191	.491	.379
EIO	-1.421	.191	4.492	.379
IHD	-.776	.191	.811	.379
ISD	-.636	.191	.258	.379
EID	-.669	.191	.349	.379
Valid N (listwise)=162				

Table (8) Skewness and Kurtosis

All construct results normality were accepted; however, EIO construct introduced an accepted skewness of -1.417, but not the kurtosis value of 4.456, which is violating the accepted range. This kurtosis value of EIO data is considered as nonnormal that led to transform this data via accepted statistical processes to enhancing the kurtosis in order to fall in the accepted interval be between ± 2.58 at 0.01 significance level or ± 1.96 at 0.05 significance level. This process will take place on all variables in order to make sure that the data fall in the accepted interval of the skewness and kurtosis to be considered normal in the way to further the test to correlation and regression.

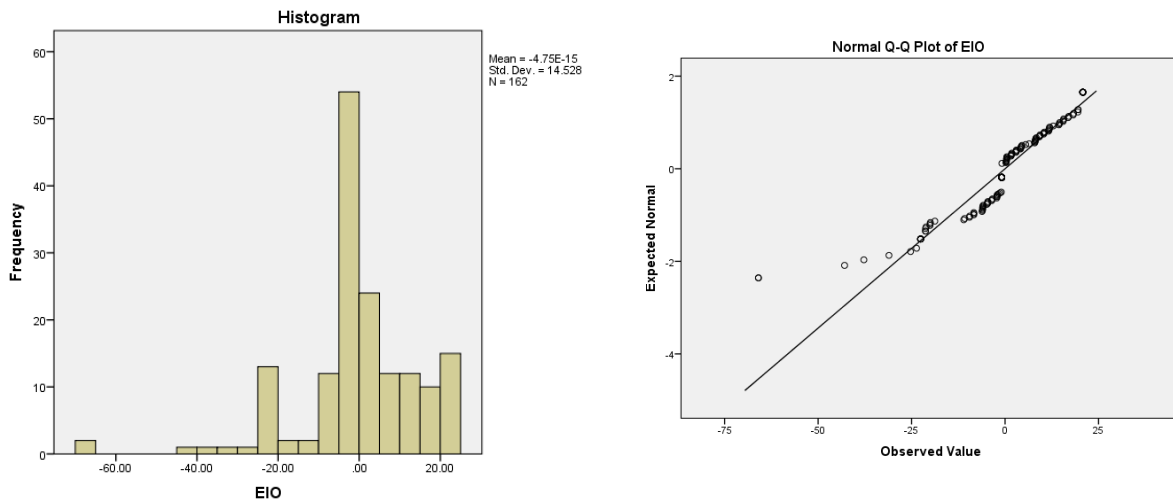


Figure (34) EIO Normality Test

7.5.1. Enhance the kurtosis for the EIO collated data.

There are many transformations methods like (square root, log, inverse) are used to improve the normality of the variables as “Data transformations are commonly-used tools that can serve many functions in quantitative analysis of data, including improving normality of a distribution and equalizing variance to meet assumptions and improve effect sizes, thus constituting important aspects of data cleaning and preparing for your statistical analyses.” as stated by Osborne (2010). This process is also supported by Field (2013) to transform the data to enhance the skewness and kurtosis. Based on that, to enhance the kurtosis of the EIO collated data to fall in the accepted interval be between ± 2.58 at 0.01 significance level or ± 1.96 at 0.05 significance level in order to be considered accepted with the defined interval. The first step is to centralise and standardise the EIO entries. The second step is using the Reflected Square Root (RSR) process as EIO produced a negative skewness that follows RSR shape (Osborne 2010). This process starts by the centralised

and standardised entries of the EIO through subtracting EIO from the maximum values added to one, and then, apply the square root. When the new EIO been developed, a new normality test took place, and the result showed a significant enhancement of the skewness and kurtosis values that fall in the accepted interval as shown in the Table (9) below. This enhanced EIO will be coded as EIOSR to indicate the usage of the reflected square root on the original EIO. The same process took place on EIO have been implemented on all of the identified variables that led to having them all satisfying the skewness and kurtosis accepted values.

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
EE_SR	.039	.191	-.119	.379
LMS_SR	-.032	.191	-.004	.379
BIP_SR	-.438	.191	.940	.379
OB_SR	-.173	.191	-.165	.379
ER_SR	-.277	.191	.425	.379
CQ_SR	-.472	.191	-.056	.379
EIO_SR	-.240	.191	.646	.379
IHD_SR	-.122	.191	.718	.379
ISD_SR	-.154	.191	-.016	.379
EID_SR	-.286	.191	.635	.379
Valid N (listwise)=1 62				

Table (9) Enhanced Skewness and Kurtosis

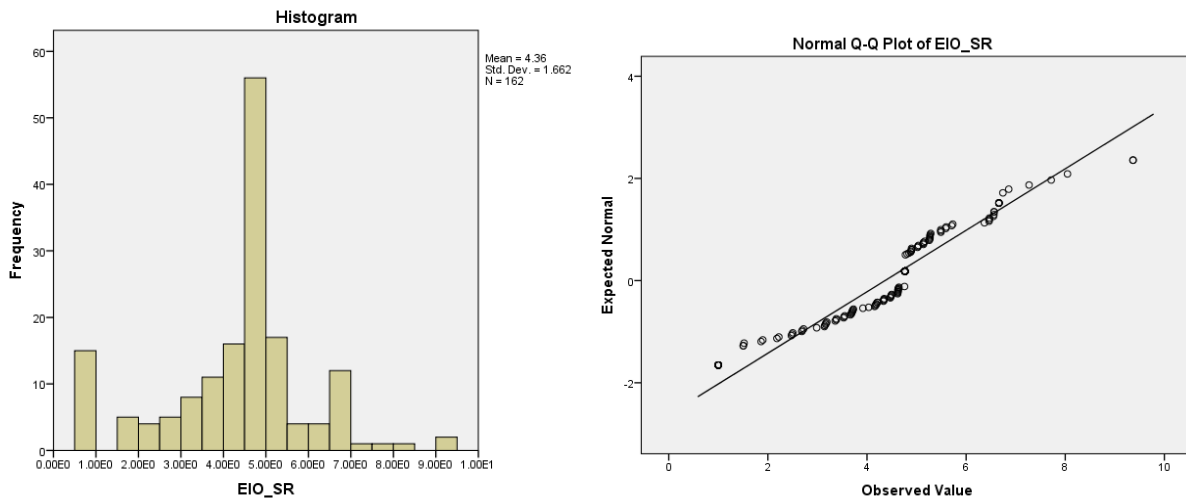


Figure (35) EIO Enhanced Normality

By having all construct normally distributed, the next step will be through furthering the analysis to discover the association between them.

7.6. Frequencies Analysis

This section provides an overview of each variable from a statistical perspective. Ten facets were identified from this research conceptual framework. The aim is to measure the influence of the independent variables of Emergence of Innovation Drivers (EE, LMS, BIP, IHD, OB, ER, ISD, and EID-the global effect) on the dependent variable of Emergence of Innovation Outcomes EIO (one facet) with Cultural Intelligence (CQ) as moderator or mediator.

7.6.1. Frequencies for the Questionnaire Responses.

The below bar charts provide insights on the frequencies of the responses for the 64 questions on the Likert scale of five, where one represents strongly disagree, and five strongly agree. As shown in the bar charts, the highest frequencies answers where at scale 4 = agree, which means that there is a high level of concordance among the questionnaire participants on the prominence of innovation drivers and outcomes in the public sector. This result is still at a preliminary stage until the further investigations take place by comparing the variables means, so we accept or reject this result.

7.6.1.1. Employee Empowerment

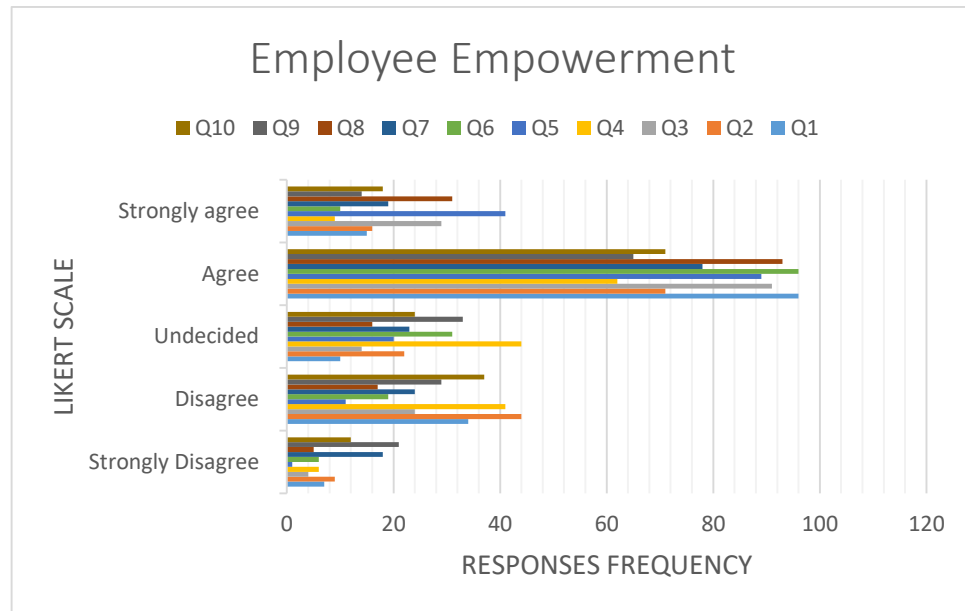


Figure (36) Employee Empowerment Frequencies

Based on the responses related to Employee Empowerment, around 62% are considered empowered. These results indicate a level of support to the Employee Empowerment selected factors, and at the same time, shows a high percentage of Employee Empowerment in the public sector higher education. On the other hand, Around 15% were undecided, and around 22% are considered not empowered, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education providers.

For reporting questions with highest response rates on agreement or disagreement, question eight received the highest support by 77% agreed and strongly agreed they were provided with training to increase their abilities for better job performance in addition to generating innovation. This question was followed by question one with 69% agreed that they have a level of autonomy to perform their duties, and then was followed by question six by 65% agreed that their new ideas have the potential to be tested and developed with support from subject matter experts. On the other hand, there was a level of disagreement on some EE factors starting with question two by 33% disagreed on being involved in related department operations like decision making in addition to process development. This question was followed by question nine with 31% disagreed on having career development pathways within their organisation and then was followed by question ten by 30% disagreed on being provided with support and sufficient time to generate and adopt innovation.

7.6.1.2. Line Manager Support.

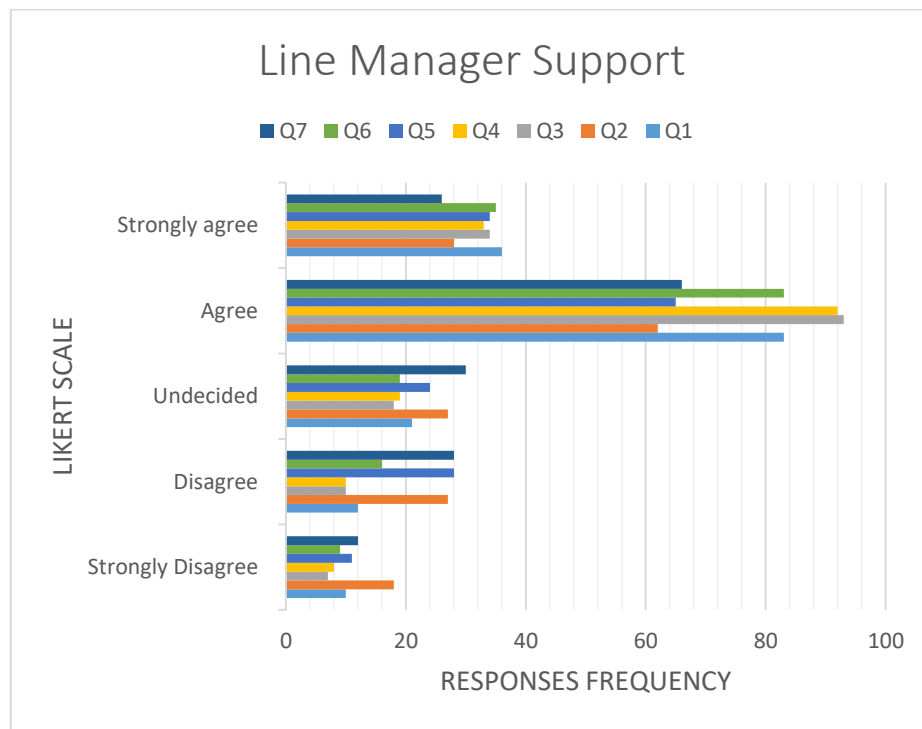


Figure (37) Line Manager Support Frequencies

Based on the responses related to Line Manager Support, around 68% declared that they are receiving support from their line manager. These results indicate a level of support to the Line Manager Support selected factors, and at the same time, shows a high percentage of Line Manager Support in the public sector higher education that also supports getting 62% of empowered employees. On the other hand, Around 14% were undecided, and around 19% are considered not supported by their line managers, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education service providers.

For reporting questions with highest response rates on agreement or disagreement, question three received the highest support by 78% agreed and strongly agreed that their line manager

supports innovation by maintaining a cross-cultural working environment. This question was followed by question four by 77% agreed that their line manager delegates authority for better job performance, and then was followed by question one and question six respectively by 63% agreed that their line manager supports innovation through guidance and resource allocation, in addition to the facilitation of professional communication. On the other hand, there was a level of disagreement on some LMS factors starting with question two by 28% disagreement on the fact that their line manager considers failure as an innovation opportunity so they can have a level of confidence in practising their responsibilities. This question was followed by question seven with 25% disagreement on having a professional development to enhance their performance via developed plan by their line manager, and then was followed by question five with 24% disagreement on being part of the department related matters like process development, implementation and decision making.

7.6.1.3. Board of Innovation Provision

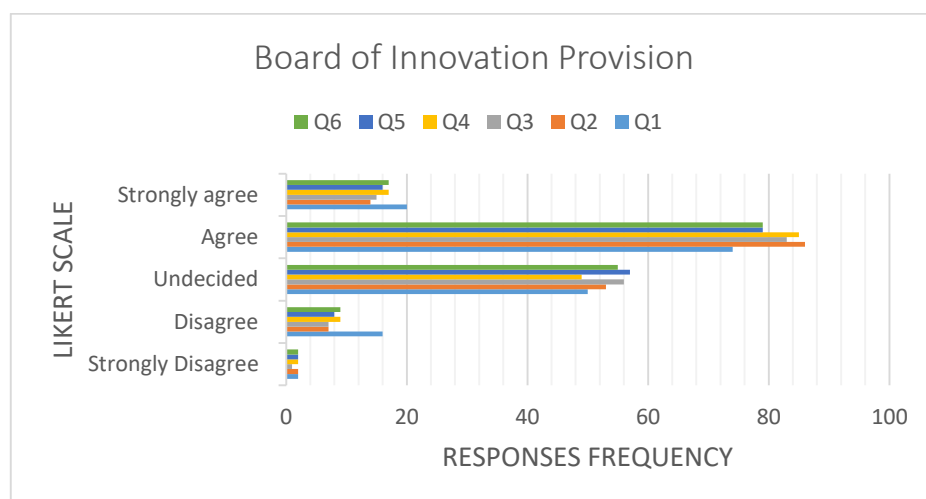


Figure (38) Board of Innovation Provision

Based on the responses related to the Board of Innovation Provision, around 60% agreed on the fact that the Board of Innovation Provision contributes to supporting the emergence of innovation in the public sector. These results indicate a level of support to the Board of Innovation Provision selected factors, and at the same time, suggests to adopt this concept to support the emergence of innovation in the public sector. On the other hand, Around 33% were undecided that might be due to the concept newness to them, and around 7% did not believe that this concept supports innovation in the public sector higher education service providers.

For reporting questions with highest response rates on agreement or disagreement, question four received the highest support by 63% agreed and strongly agreed on the capability of the board of innovation to utilise the organisation's resources to foster successful innovation. This question was followed by question two with 62% agreed on the capability of the board of innovation to understand the government rules and regulations towards embedding them in the innovation development process, and then was followed by question three by 60% agreed on the capability of the board of innovation to understand the community needs and culture towards embedding them in the innovation development process. On the other hand, there were a level of disagreement on some BIP factors starting with question one by 11% disagreed on the capability of the board of innovation to integrate their interdisciplinary experiences towards nurturing the emergence of innovation. This question was followed by question six with 7% disagreed on the capability of the board of innovation to satisfy the customers by understanding their needs, and develop innovative solutions accordingly, and then was followed by question four by 7% disagreed on the capability of the board of innovation to utilise the organisation's resources towards fostering successful innovation.

7.6.1.4. Organisation Behaviour

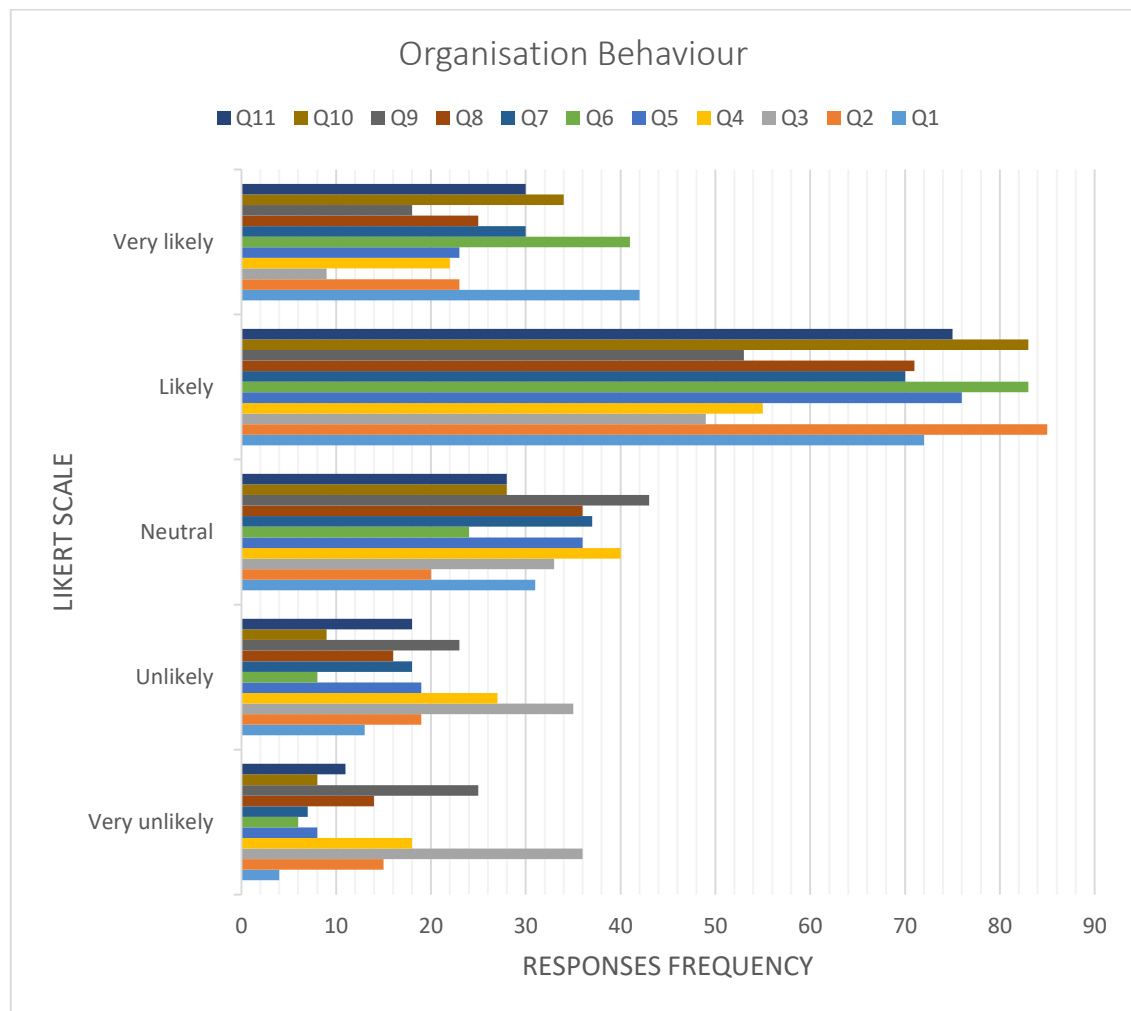


Figure (39) Organisation Behaviour

Based on the responses related to Organisation Behaviour, around 60% considered their organisation supporting innovation. These results indicate a level of support to the Organisation Behaviour selected factors, and at the same time, shows a high percentage of innovative organisational behaviour in the public sector higher education service providers that also supports getting 62% of empowered employees. On the other hand, Around 20% were undecided, and

around 20% considering their organisation does not support innovation, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education service providers.

For reporting questions with highest response rates on agreement or disagreement, question six received the highest support by 77% agreed and strongly agreed on they are working in an organisation with vision and mission that supports innovation. This question was followed by question ten with 72% agreed on they are working in an organisation that accepts change towards adopting innovation and respond to the technology evolution, and then was followed by question one by 70% agreed on they are working in an organisation that creates the right environment for generating new ideas. On the other hand, there was a level of disagreement on some OB factors starting with question three by 44% disagreed on they are working in an organisation that develop the decisions with employee consultation. This question was followed by question nine by 30% disagreed on they are working in an organisation that supports innovation by adopting flexible structure to remove obstacles towards innovation adoption, and then was followed by question four by 28% disagreed on they are working in an organisation that supports professional communication across all levels.

7.6.1.5. Environment Readiness

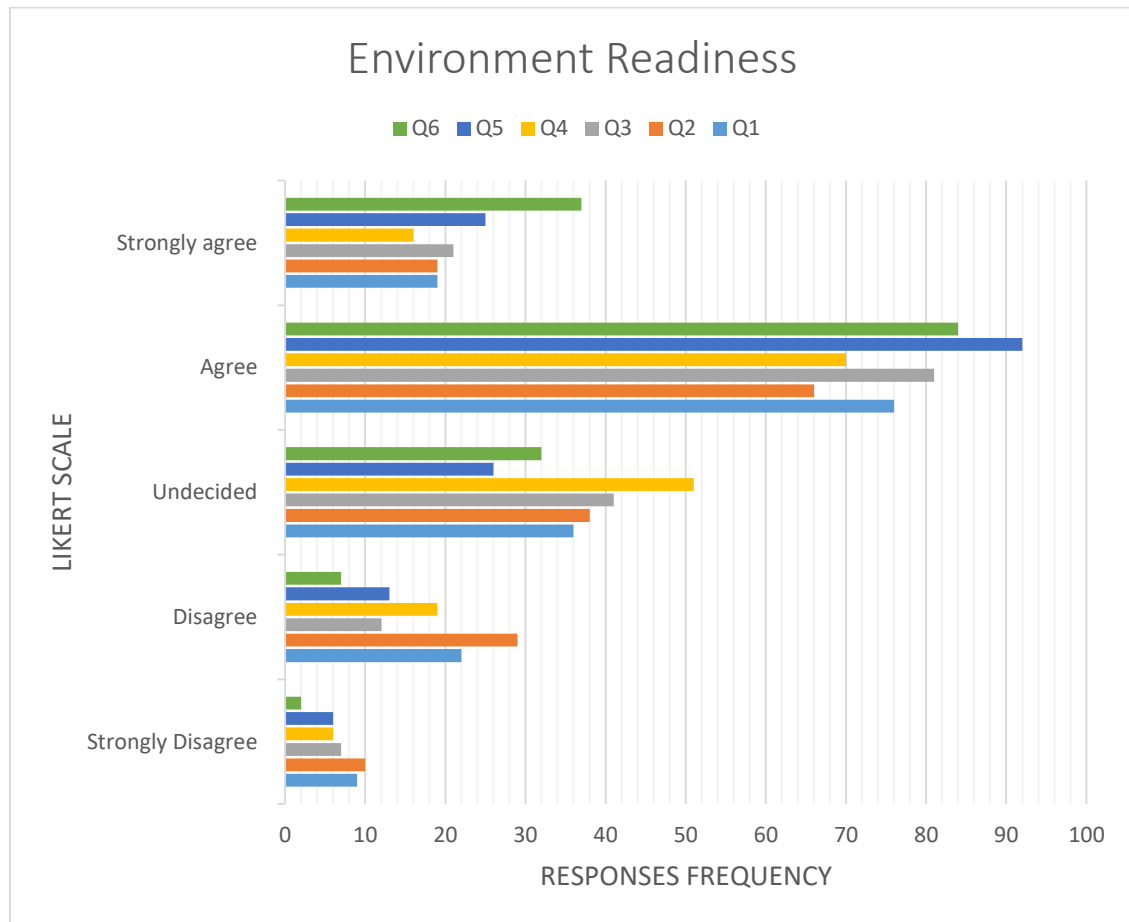


Figure (40) Environment Readiness

Based on the responses related to Environment Readiness, around 62% considered their internal and external working environment is ready to innovate. This result indicates a level of support to the Environment Readiness selected factors, and at the same time, shows a high percentage of environment readiness in the public sector higher education service providers that also could be influenced by having 62% of empowered employees. On the other hand, Around 23% were undecided, and around 14% considering their internal and external working environment are not ready to innovate.

For reporting questions with highest response rates on agreement or disagreement, question six received the highest support by 75% agreed and strongly agreed on they are working in an environment that has dynamic needs which require continual innovation adoption to meet their needs. This question was followed by question five with 72% agreed on they are working in an environment that is competitive and required continuous innovation adoption, and then was followed by question three by 63% agreed on they are working in an environment where customers are willing to adopt innovation. On the other hand, there was a level of disagreement on some ER factors starting with question two by 24% disagreed on they are working in an environment that is considered the right environment for innovation to emerge. This question was followed by question one with 19% disagreed on they are working in an environment where innovation adoption is facilitated by relevant rules and regulations, and then was followed by question four by 15% disagreed on they are working in an environment where innovation is adopted with customer participation and involvement.

7.6.1.6. Cultural Intelligence

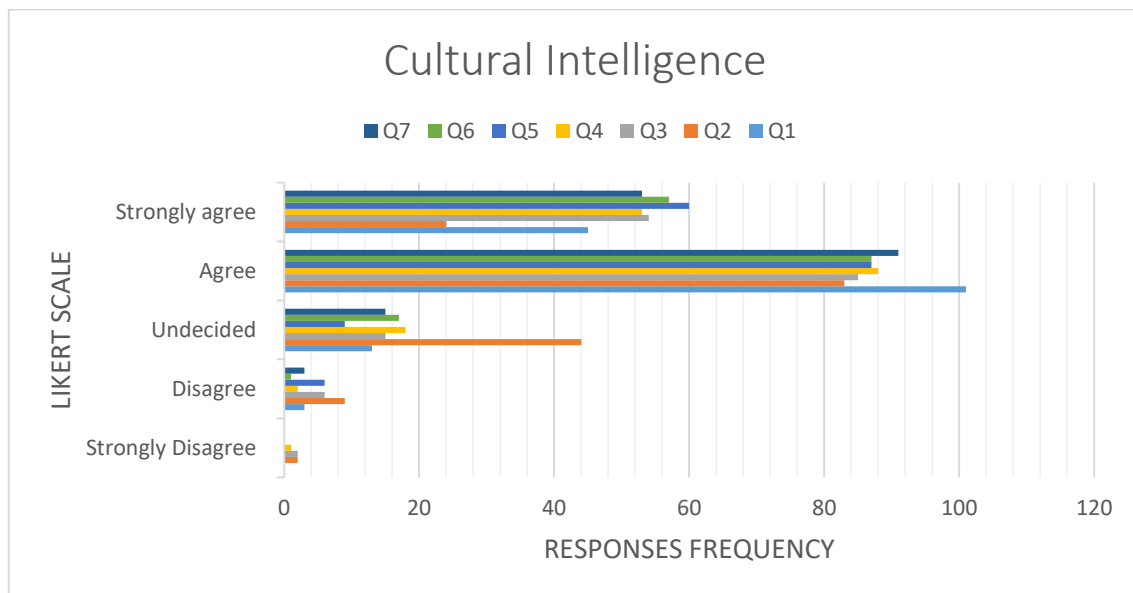


Figure (41) Cultural Intelligence

To measure Cultural intelligence in this research; seven questions were developed and incorporated into this research questionnaire under the CQ integrated facet, where participants will answer these CQ questions on a five-point Likert scale. The high degree of the correspondent agreement on these questions indicates a high level of CQ, which means that such an individual possesses the defined abilities and qualities to function effectively in multicultural settings. This CQ scale and measurement concept are supported by scholars like Al Ang et al. (2007), Thomas et al. (2015), and Bucker et al. (2015). Based on the responses related to Cultural Intelligence in this research, around 86% of the participants responded with agreement on the related CQ questions, which indicates that they possess a high level of CQ. This result indicates a level of support to the CQ selected factors, and at the same time, a high level of CQ in the public sector higher education

service providers. On the other hand, Around 12% were undecided that might be due to the concept newness to them, and around 3% considered with a low level of CQ.

For reporting questions with highest response rates on agreement or disagreement, question five received the highest support by 91% agreed and strongly agreed on they have the ability to adjust and deal with stress caused by a multicultural working environment that is different from their culture. This question was followed by question one with 90% agreed on they have the ability to utilise their cultural experience to adopt innovation in a multicultural working environment, and then was followed by question six and seven respectively by 89% agreed on they have the ability to communicate and interact in a multicultural setting through using communication techniques and changing the non-behavioural approach. On the other hand, there was a level of disagreement on some CQ factors starting with question two by 7% disagreed on they have the knowledge on the required legal and economic perspectives that supports innovation adoption in a multicultural working environment. This question was followed by question three with 5% disagreed on they are aware of how to encourage generating new ideas through related cultural and religious values and beliefs, and then was followed by question five by 4% disagreed on they have the ability to excel under stress caused by new culture for them.

7.6.1.7. Emergence of Innovation Outcomes

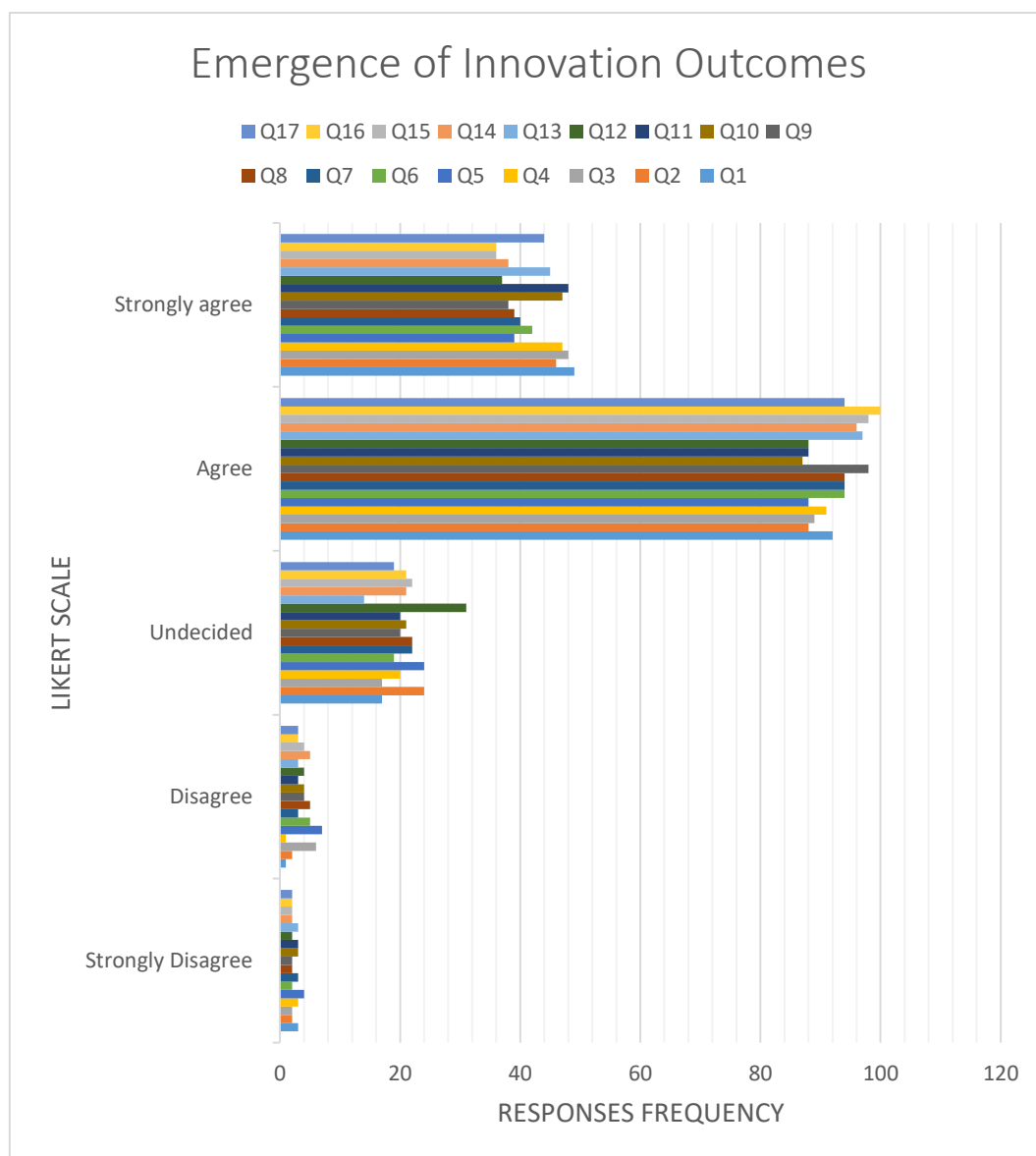


Figure (42) Emergence of Innovation Outcomes

Based on the responses related to the Emergence of Innovation Outcomes, around 83% agreed on the defined emergence of innovation outcomes within public sector higher education service providers. These results indicate a level of support to the Emergence of Innovation

Outcomes selected factors in this research in the way to support and benefit from transforming the public sector higher education to the right environment for innovation to emerge and achieving the higher education outcomes. On the other hand, around 13% were undecided, and around 4% considered the emergence of innovation in the public sector would not support achieving the required outcomes, which is considered a low percentage comparing with the domination of responses supported this concept.

For reporting questions with highest response rates on agreement or disagreement, question thirteen received the highest support by 88% agreed and strongly agreed on the enhancement of professional academic competence as one of the emergence of innovation outcomes. This question was followed by question one with 87% agreed on the enhancement of education quality as one of the emergence of innovation outcomes, and then was followed by question three, four, seventeen respectively by 85% agreed on the increase of organisation capacities to create new ideas, adopt and implement innovation, and graduating students with 21st century required skills and technical competencies as part of the emergence of innovation outcomes. On the other hand, there was a level of disagreement on some EIO factors starting with question five by 7% disagreed on the increasing the efficiency for resources allocation to support innovation as one of the emergence of innovation outcomes. This question was followed by question three with 5% disagreed on increasing the organisation flexibility to adopt innovation as one of the emergence of innovation outcomes, and then most of the rest questions scored 4% (10 questions). please refer to the questionnaire in appendix (B)

7.6.2. Independent and Dependent Variables: Mean, Standard Deviation, and Variation

The below Figure (43) and Table (10) illustrates the descriptive statistics for the independent and dependent variables from the research conceptual framework. The emergence of Innovation Outcomes has the highest-ranked frequency with a Mean of (4.3628), Standard Deviation at (1.66234), Variation at (2.763), and Bias = 0. The EIO consists of 17 questions focusing on Process, Product, Service, Customer Satisfaction, Efficiency, and Effectiveness on the Innovation Outcomes in Public Sector Higher Education Service Providers. The second variable in highest frequency is Organisation Behaviour with a Mean of (3.8188), Standard Deviation at (1.19407), Variation at (1.426), and Bias = 0. The OB consists of eleven questions focusing on organisation empowering behaviour, innovation culture, resources allocation, and competitiveness.

Employee Empowerment came in the third rank with a Mean of (3.5931), Standard Deviation at (0.9359), Variation at (0.835), and Bias = 0. The EE consists of ten questions focusing on Employee autonomy, access to resources, decision making, effective organisational communication channels, a supportive working environment, continuous professional development, career progression, and support innovation adoption. The fourth level was for Board on Innovation Provision with a Mean of (3.2890), Standard Deviation at (0.82245), Variation at (0.676), and Bias = 0. The BIP consists of six questions focusing on support emergence of innovation, align innovation with government rules and regulations, align innovation with the community beliefs and core values, utilise organisational resources and foster capabilities, integrate customer needs to generate innovative solution towards customer satisfaction.

The fifth rank was for Environment Readiness with a Mean of (3.0216), Standard Deviation at (0.78983), Variation at (0.624), and Bias = 0. The ER consists of six questions focusing on rules and regulations facilitate innovation, hosting innovation environment readiness, customer needs, innovation adoption, customer participation in innovation development. Cultural Intelligence came in the sixth rank with a Mean of (2.9439), Standard Deviation at (0.89923), Variation at (0.809), and Bias = 0. The CQ consists of seven questions focusing on cross-cultural adjustment, performance, and engagement effectiveness. On the other hand, the results of the descriptive statistics identified Line Manager Support as the lowest-ranked frequency with a Mean of (2.9438), Standard Deviation at (0.99003), Variation at (.980), and Bias = 0. The LMS consists of six questions focusing on leadership behaviour, innovation adoption, resource allocations, creating an environment for innovation to emerge, authority delegation, support multicultural settings, employee involvement in decision making, and subordinates professional development.

It is noticed that the range of the scores related to the variables means is relatively small from 2.94 to 4.4, with the highest range with most of the scores above 3.02. This result shows that more than 71% of the participants agree on the significance of adopting the innovation drivers at the individual, group, organisational, and community levels to make the public sector the right environment for innovation to emerge. The facets IHD, ISD, and EID were intentionally not included in the frequency summaries as they form the sum of the other variables.

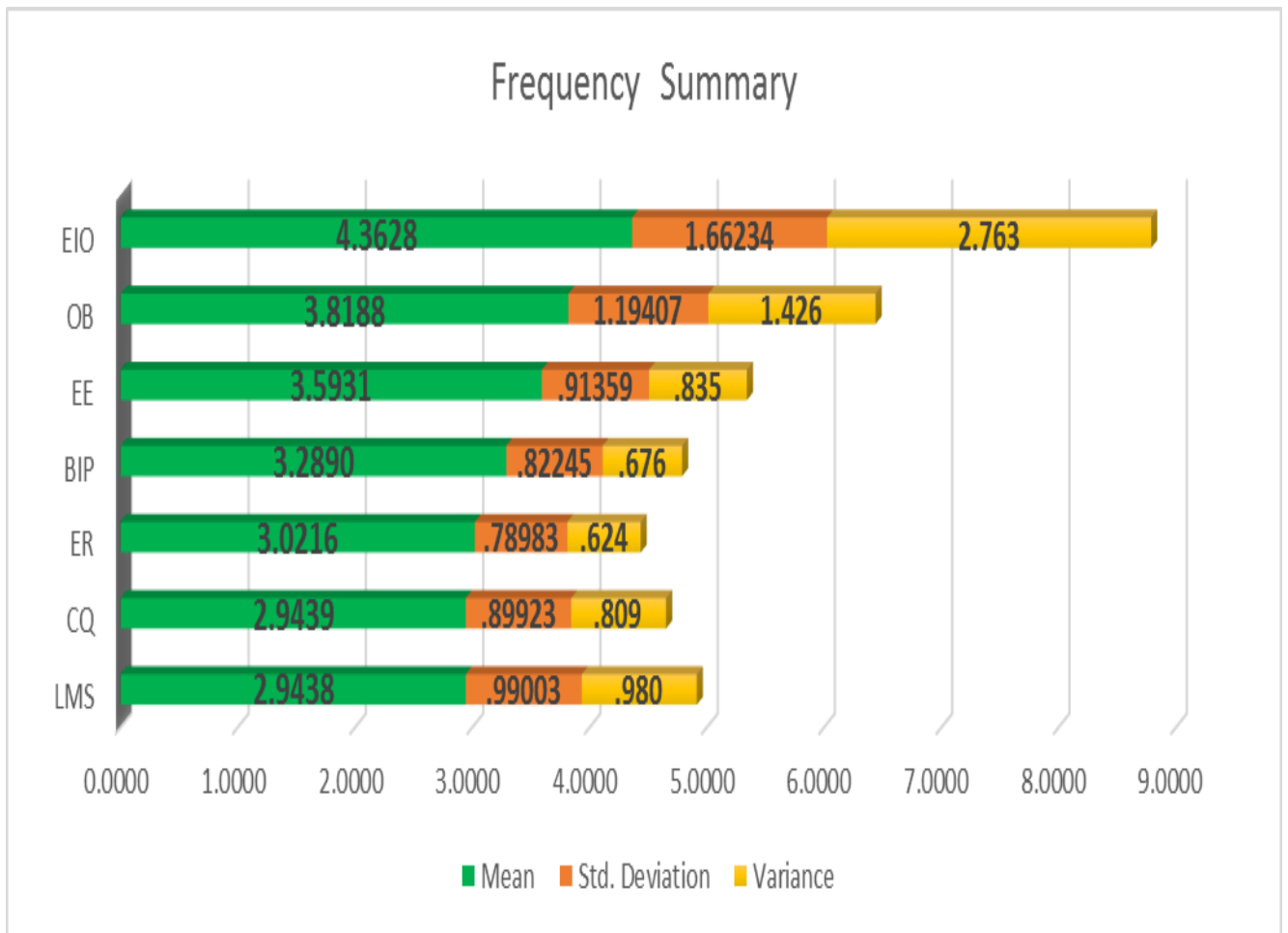


Figure (43) Frequency Summary

		Statistic	Bootstrap ^a			
			Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
EE_SR	N	162	0	0	162	162
	Mean	3.5931	.0008	.0715	3.4503	3.7337
	Std. Deviation	.91359	-.00455	.04850	.81504	1.00562
	Variance	.835	-.006	.088	.664	1.011
LMS_SR	N	162	0	0	162	162

	Mean	2.9438	.0009	.0772	2.7938	3.0957
	Std. Deviation	.99003	-.00472	.05441	.87707	1.09012
	Variance	.980	-.006	.107	.769	1.188
BIP_SR	N	162	0	0	162	162
	Mean	3.2890	.0002	.0642	3.1614	3.4132
	Std. Deviation	.82245	-.00453	.05492	.71131	.92616
	Variance	.676	-.004	.090	.506	.858
OB_SR	N	162	0	0	162	162
	Mean	3.8188	.0005	.0933	3.6323	4.0026
	Std. Deviation	1.19407	-.00557	.06310	1.06294	1.31342
	Variance	1.426	-.009	.150	1.130	1.725
ER_SR	N	162	0	0	162	162
	Mean	3.0216	.0001	.0617	2.9023	3.1448
	Std. Deviation	.78983	-.00428	.04748	.69197	.87712
	Variance	.624	-.004	.075	.479	.769
CQ_SR	N	162	0	0	162	162
	Mean	2.9439	-.0001	.0694	2.8075	3.0793
	Std. Deviation	.89923	-.00461	.04845	.79742	.98766
	Variance	.809	-.006	.087	.636	.975
EIO_SR	N	162	0	0	162	162
	Mean	4.3628	.0014	.1286	4.1107	4.6206
	Std. Deviation	1.66234	-.00937	.10436	1.44627	1.85928
	Variance	2.763	-.020	.345	2.092	3.457
IHD_SR	N	162	0	0	162	162
	Mean	5.4861	.0012	.1056	5.2748	5.6891
	Std. Deviation	1.35061	-.00763	.08640	1.17696	1.51609
	Variance	1.824	-.013	.233	1.385	2.299

ISD_SR	N	162	0	0	162	162
	Mean	4.7887	.0005	.1055	4.5793	4.9978
	Std. Deviation	1.35262	-.00680	.07406	1.19963	1.49093
	Variance	1.830	-.013	.199	1.439	2.223
EID_SR	N	162	0	0	162	162
	Mean	6.9036	.0014	.1501	6.6033	7.1939
	Std. Deviation	1.92450	-.01102	.12112	1.67691	2.15452
	Variance	3.704	-.028	.464	2.812	4.642
Valid N (listwise)	N	162	0	0	162	162
a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples						

Table (10) Variables Descriptive Statistics

7.7. Hypotheses Testing:

For testing research hypotheses, correlation test followed by regression test will take place in this section. The relationships for the identified independent the dependent variable will be tested and validated in the way to accept or reject the research hypotheses.

7.7.1. Correlation Test (Pearson)

This section introducing the correlation test between the defined variables and reports them in the way to have a better understanding of the relationships between the independent and dependent variables. This step will be considered as the initial stage for testing the research hypotheses that will be followed by the regression test for accepting or declining.

7.7.1.1. The Employee Empowerment (EE_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of ten questions for EE_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a weak positive correlation (0.370) that is significant with $p < 0.01$, and Bias around 0 at significance 99%. This result suggested that an increase in Employee Empowerment will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	EE_SR
EIO_ SR	Pearson Correlation			1	.370**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.002
		Std. Error		0	.074
		BCa 99% Confidence Interval	Lower	.	.170
			Upper	.	.548
EE_ SR	Pearson Correlation			.370**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.002	0
		Std. Error		.074	0
		BCa 99% Confidence Interval	Lower	.170	.
			Upper	.548	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (11) EE and EIO Correlation

7.7.1.2. The Line Manager Support (LMS_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of seven questions for LMS_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.420) that is significant at ($p < 0.01$), with Bias = 0 at significance 99%. This result suggested that an increase in the Line Manager Support will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	LMS_SR
EIO_ SR	Pearson Correlation			1	.420**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	.000
		Std. Error		0	.075
		BCa 99% Confidence Interval	Lower	.	.197
			Upper	.	.601
LMS_ SR	Pearson Correlation			.420**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		.000	0
		Std. Error		.075	0
		BCa 99% Confidence Interval	Lower	.197	.
			Upper	.601	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (12) LMS and EIO Correlation

7.7.1.3. The Board of Innovation Provision (BIP_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of six questions for BIP_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. A weak positive correlation (0.368) was found that is significant at ($p < 0.01$), and Bias around 0 at significance 99%. This result suggested that an increase in the Board of Innovation Provision will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	BIP_SR
EIO_ SR	Pearson Correlation			1	.368**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.001
		Std. Error		0	.080
		BCa 99% Confidence Interval	Lower	.	.137
			Upper	.	.557
BIP_ SR	Pearson Correlation			.368**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.001	0
		Std. Error		.080	0
		BCa 99% Confidence Interval	Lower	.137	.
			Upper	.557	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (13) BIP and EIO Correlation

7.7.1.4. The Innovation Human Drivers (IHD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The IHD_{SR} scale scores were computed by adding the responses of twenty-three questions (EE_{SR}, LMS_{SR}, and BIP_{SR}) for IHD_{SR} and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.459) that is significant at ($p < 0.01$), with Bias around 0 at significance 99%. This test showed a correlation between the variables that indicate a positive association between IHD_{SR} and EIO_{SR}. This result suggested that an increase in the Innovation Human Drivers will be associated with an increase in the Emergence of Innovation Outcomes. Hence we initially accept H1.

				EIO_SR	IHD_SR
EIO_ SR	Pearson Correlation			1	.459**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.004
		Std. Error		0	.073
		BCa 99% Confidence Interval	Lower	.	.242
			Upper	.	.621
IHD_ SR	Pearson Correlation			.459**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.004	0
		Std. Error		.073	0
		BCa 99% Confidence Interval	Lower	.242	.
			Upper	.621	.

** . Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (14) IHD and EIO Correlation

7.7.1.5. The Organisation Behaviour (OB_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of eleven questions for OB_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.493) that is significant at ($p < 0.01$), and Bias around 0 at significance 99%. This result suggested that an increase in the Organisation Behaviour will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	OB_SR
EIO_SR	Pearson Correlation			1	.493**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.002
		Std. Error		0	.077
		BCa 99% Confidence Interval	Lower	.	.265
			Upper	.	.663
OB_SR	Pearson Correlation			.493**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.002	0
		Std. Error		.077	0
		BCa 99% Confidence Interval	Lower	.265	.
			Upper	.663	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (15) OB and EIO Correlation

7.7.1.6. Environment Readiness (ER_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of six questions for ER_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.469) that is significant at ($p < 0.01$), and Bias = 0 at significance 99 %. This result suggested that an increase in Environment Readiness will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	ER_SR
EIO_SR	Pearson Correlation			1	.469**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	.000
		Std. Error		0	.082
		BCa 99% Confidence Interval	Lower	.	.233
			Upper	.	.671
ER_SR	Pearson Correlation			.469**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		.000	0
		Std. Error		.082	0
		BCa 99% Confidence Interval	Lower	.233	.
			Upper	.671	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (16) ER and EIO Correlation

7.7.1.7. The Innovation System Drivers (ISD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of seventeen questions for ISD_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.523) that is significant at $p < 0.01$ and Bias around 0 at significance 99%. This test showed a correlation between the variables that indicate a positive association between ISD_{SR} and EIO_{SR}. This result suggested that an increase in the Innovation System Drivers will be associated with an increase in the Emergence of Innovation Outcomes. Hence we initially accept H2.

					EIO_SR	ISD_SR
EIO_SR	Pearson Correlation				1	.523**
	Sig. (2-tailed)					.000
	N				162	162
	Bootstrap ^b	Bias			0	-.004
		Std. Error			0	.076
		BCa 99% Confidence Interval	Lower		.	.297
Upper			.	.691		
ISD_SR	Pearson Correlation				.523**	1
	Sig. (2-tailed)				.000	
	N				162	162
	Bootstrap ^b	Bias			-.004	0
		Std. Error			.076	0
		BCa 99% Confidence Interval	Lower		.297	.
			Upper		.691	.

**. Correlation is significant at the 0.01 level (2-tailed).

b. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (17) ISD and EIO Correlation

7.7.1.8. Cultural Intelligence (CQ_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

The scale scores were computed by adding the responses of seven questions for CQ_{SR} in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.488) that is significant at $p < 0.01$, and Bias around 0 at significance 99%. This result suggested that an increase in Cultural Intelligence will be associated with an increase in the Emergence of Innovation Outcomes.

				EIO_SR	CQ_SR
EIO_SR	Pearson Correlation			1	.488**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.001
		Std. Error		0	.084
		BCa 99% Confidence Interval	Lower	.	.252
			Upper	.	.682
CQ_SR	Pearson Correlation			.488**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.001	0
		Std. Error		.084	0
		BCa 99% Confidence Interval	Lower	.252	.
			Upper	.682	.

**, Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (18) CQ and EIO Correlation

7.7.1.9. The Emergence of Innovation Drivers (EID_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}). the global effect

The scale scores were computed by adding the responses of twenty-three questions for EID_{SR} (the combination of IHD_{SR} and ISD_{SR}) in one facet and seventeen questions for EIO_{SR} in another facet. The result showed a moderate positive correlation (0.515) that is significant at $p < 0.01$, with Bias around 0 at significance 99%. This result suggested that an increase in the Emergence of Innovation Drivers at Macro level will be associated with an increase in the Emergence of Innovation Outcomes. Hence we initially accept H3.

				EIO_SR	EID_SR
EIO_ SR	Pearson Correlation			1	.515**
	Sig. (2-tailed)				.000
	N			162	162
	Bootstrap ^c	Bias		0	-.004
		Std. Error		0	.071
		BCa 99% Confidence Interval	Lower	.	.311
			Upper	.	.676
EID_ SR_REF	Pearson Correlation			.515**	1
	Sig. (2-tailed)			.000	
	N			162	162
	Bootstrap ^c	Bias		-.004	0
		Std. Error		.071	0
		BCa 99% Confidence Interval	Lower	.311	.
			Upper	.676	.

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 5000 bootstrap samples

Table (19) EID and EIO Correlation

7.7.1.10. Conclusion

In summary and based on the provided results, the association between all the variables was positive and significant. This conclusion means that an increase in the independent variable (Emergence of Innovation Drivers) will lead to an increase in the dependent variable (Emergence of Innovation Outcomes), which leads to initially accepting the research first three hypotheses. These unique findings are showing a level of significance in this research conceptual framework, philosophy, approach, design, methodology, and method that successfully constructed the variables and connected them through unidirectional connections. Such promising positive associations for all variables are encouraging to further the investigation to regression level for hypotheses further validations.

No	Independent Variable	Dependent Variable	Correlation Summary	Related Hypothesis	Hypothesis status	
					Accept	Reject
1	EE _{SR}	EIO _{RS}	Positive correlation (0.370) significant p< 0.01	H1	A	
2	LMS _{RS}	EIO _{RS}	Positive correlation (0.420) significant p< 0.01			
3	BIP _{SR}	EIO _{RS}	Positive correlation (0.368) significant p< 0.01			
4	IHD _{SR}	EIO _{RS}	Positive correlation (0.459) significant p< 0.01			
5	OB _{SR}	EIO _{RS}	Positive correlation (0.493) significant p< 0.01	H2	A	
6	ER _{SR}	EIO _{RS}	Positive correlation (0.469) significant p< 0.01			

7	ISD _{SR}	EIO _{RS}	Positive correlation (0.523) significant $p < 0.01$			
8	EID _{SR}	EIO _{RS}	Positive correlation (0.515) significant $p < 0.01$	H3	A	
9	CQ _{SR}	EIO _{RS}	Positive correlation (0.488) significant $p < 0.01$	Part of H4	Not applicable	

Table (20) Association Summaries

7.7.2. Regression Test:

In this section, three tests will take place per each independent facet in order to predict the dependent facet under the defined conditions (direct, moderator, and mediator). The overall methods in this section related to the regression analysis are illustrated in the below Figure (44):

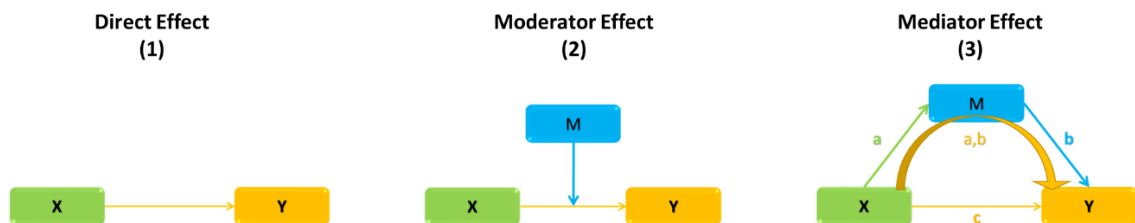


Figure (44) Regression Modules Summary

- **Module (1) Direct effect between variables (independents and the dependent) using linear regression followed by brief results interpretations.**

Prediction Equation $y = b_1 + b_2 * x$



Figure (45) Direct Effect

- **Module (2) CQ as a Moderator on the relation between the dependant and independent variables followed by brief results interpretations.**

The interactions between the independent variables, dependent variable, and CQ as moderator will be tested through the hierarchical regression method analysis via (Process v3 by Andrew F. Hayes, model – 1) that will be followed to test if the independent facets significantly predicted the dependent facet using the moderator influence on these interactions. The first entry will be **y** = dependent variable, the second entry will be **x** = independent variable, and the third entry will be **m** = moderator. Below Figure (46) is showing the moderator effect on the relationships between the variables.

Prediction equation $y = b_1 + b_2 x + b_3 m + b_4 x*m$



Figure (46) Moderator Effect

- **Module (3) CQ as a mediator on the relationships between the dependent and independent variables followed by brief results interpretations.**

This section will follow the Baron and Kenny (1986) causal steps, and the regression will be through (Process v3 by Andrew F. Hayes, model – 4) following the below steps that summarise the mediator method as follows:

- 1- First path: x variable predicts y – the direct path c
- 2- Second path: x variable predicts m – the direct path a
- 3- Third path: x and m together predicting y – the indirect path a,b

Prediction equation $Y = b_1 + b_2 x + b_3 m$

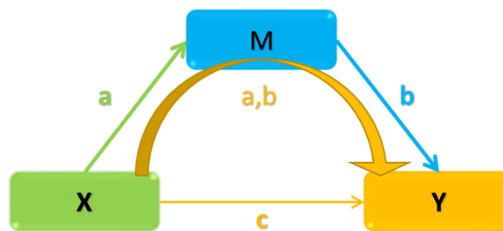


Figure (47) Mediator Effect

7.7.2.1. Module (1) Direct Relationship between the variables without CQ:

In this section, a direct relationship test via regression method will take place on the independent and dependent variable to test the effect. A prediction equation will be developed when appropriate to link the variable from a mathematical perspective.

7.7.2.1.1. The Employee Empowerment (EE_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR})

Linear regression analysis was used to test if EE_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of R=0.370 suggests a positive relationship between EE_{SR} and EIO_{SR}. Also, the R²= 0.137, which indicates an acceptable level of goodness in this model, were 14% of the variance of EIO_{SR} could be explained by EE_{SR}. Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because F(1,160)= 25.343 at significant value p< 0.01. Finally, b₁= 1.945, b₂=0.673, and t(1,160)=5.034 with Beta positive value =0.370 indicates that a higher level of Employee Empowerment might increase the Emergence of Innovation Outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.945 + 0.673 \text{EE}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.370 ^a	.137	.131	1.54933	.137	25.343	1	160	.000

a. Predictors: (Constant), EE_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.834	1	60.834	25.343	.000 ^b
	Residual	384.068	160	2.400		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), EE_SR

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.945	.495		3.926	.000	.967	2.924					
EE_SR	.673	.134	.370	5.034	.000	.409	.937	.370	.370	.370	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	EE_SR
1	1	1.969	1.000	.02	.02
	2	.031	8.015	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.6178	5.9000	4.3628	.61469	162
Residual	-4.49516	3.97838	.00000	1.54451	162
Std. Predicted Value	-2.839	2.501	.000	1.000	162
Std. Residual	-2.901	2.568	.000	.997	162

a. Dependent Variable: EIO_SR

Table (21) Results of Direct Effect of EE on EIO

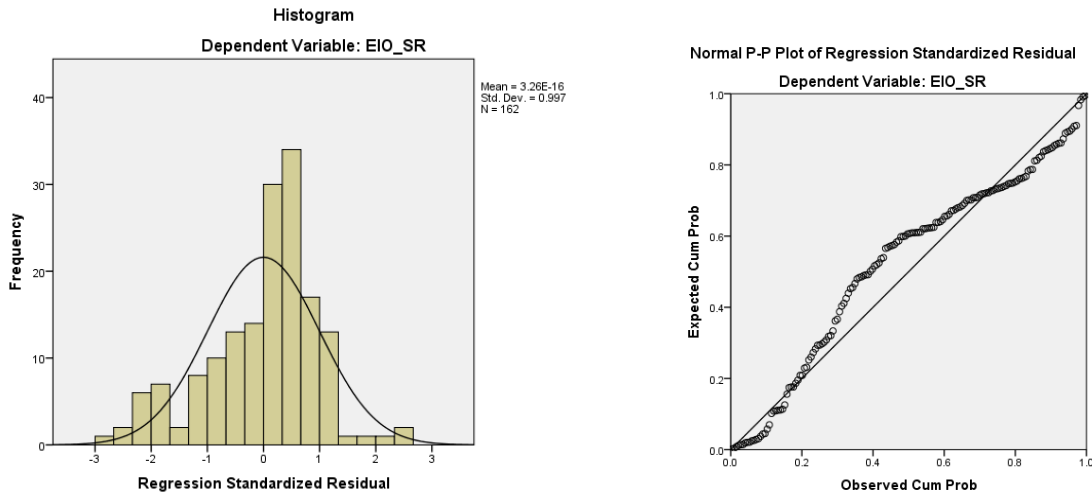


Figure (48) Results of Direct Effect of EE on EIO

7.7.2.1.2. The Line Manager Support (LMS_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if LMS_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of R=0.420 suggests a positive relationship between LMS_{SR} and EIO_{SR}. Also, the R²= 0.176, which indicates an acceptable level of goodness in this model, were 18% of the variance of EIO_{SR} could be explained by LMS_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F(1,160)= 34.207 at significant value p< 0.01. Finally, b₁= 2.288, b₂=0.705, t(1,160)=5.849, and positive Beta value =0.420 indicates that a higher level of Line Manager Support might increase the Emergence of Innovation Outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\mathbf{EIO_{SR} = 2.288 + 0.705 LMS_{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.420 ^a	.176	.171	1.51356	.176	34.207	1	160	.000

a. Predictors: (Constant), LMS_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.364	1	78.364	34.207	.000 ^b
	Residual	366.537	160	2.291		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), LMS_SR

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	2.288	.374		6.117	.000	1.550	3.027					
LMS_SR	.705	.120	.420	5.849	.000	.467	.943	.420	.420	.420	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LMS_SR
1	1	1.948	1.000	.03	.03
	2	.052	6.128	.97	.97

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.9917	5.9188	4.3628	.69766	162
Residual	-4.45274	3.51976	.00000	1.50885	162
Std. Predicted Value	-1.965	2.230	.000	1.000	162
Std. Residual	-2.942	2.325	.000	.997	162

a. Dependent Variable: EIO_SR

Table (22) Results of Direct Effect of LMS on EIO

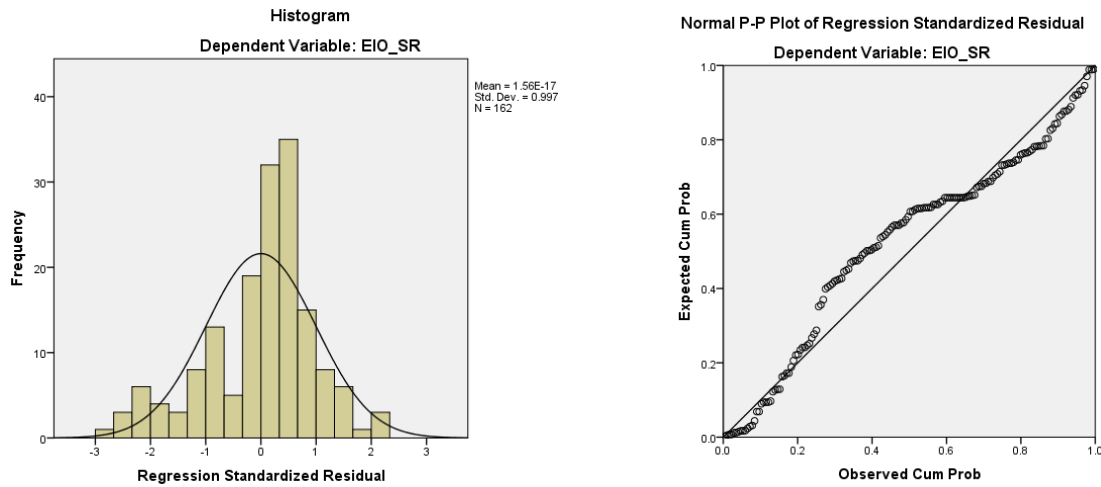


Figure (49) Results of Direct Effect of LMS on EIO

7.7.2.1.3. The Board of Innovation Provision (BIP_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if BIP_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of $R=0.368$ suggests a positive relationship

between BIP_{SR} and EIO_{SR} . Also, the $R^2 = 0.135$, which indicates an acceptable level of goodness in this model, were 14% of the variance of EIO_{SR} could be explained by BIP_{SR} . Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because $F(1,160) = 25.072$ at significant value $p < 0.01$. Finally, $b_1 = 1.916$, $b_2 = 0.744$, $t(1,160) = 5.007$ with Beta positive value $= 0.368$ indicates that a higher level of Board of Innovation Provision might increase the Emergence of Innovation Outcomes in the public sector higher education service providers. Below is the prediction equation:

$$EIO_{SR} = 1.916 + 0.744 BIP_{SR}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.368 ^a	.135	.130	1.55047	.135	25.072	1	160	.000

a. Predictors: (Constant), BIP_{SR}

b. Dependent Variable: EIO_{SR}

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.271	1	60.271	25.072	.000 ^b
	Residual	384.631	160	2.404		
	Total	444.902	161			

a. Dependent Variable: EIO_{SR}

b. Predictors: (Constant), BIP_{SR}

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.916	.504		3.804	.000	.921	2.911					
BIP_SR	.744	.149	.368	5.007	.000	.451	1.037	.368	.368	.368	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	BIP_SR
1	1	1.970	1.000	.01	.01
	2	.030	8.146	.99	.99

a. Dependent Variable: EIO_SR

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.6605	6.0913	4.3628	.61184	162
Residual	-4.55174	5.26635	.00000	1.54564	162
Std. Predicted Value	-2.782	2.825	.000	1.000	162
Std. Residual	-2.936	3.397	.000	.997	162

a. Dependent Variable: EIO_SR

Table (23) Results of Direct Effect of BIP on EIO

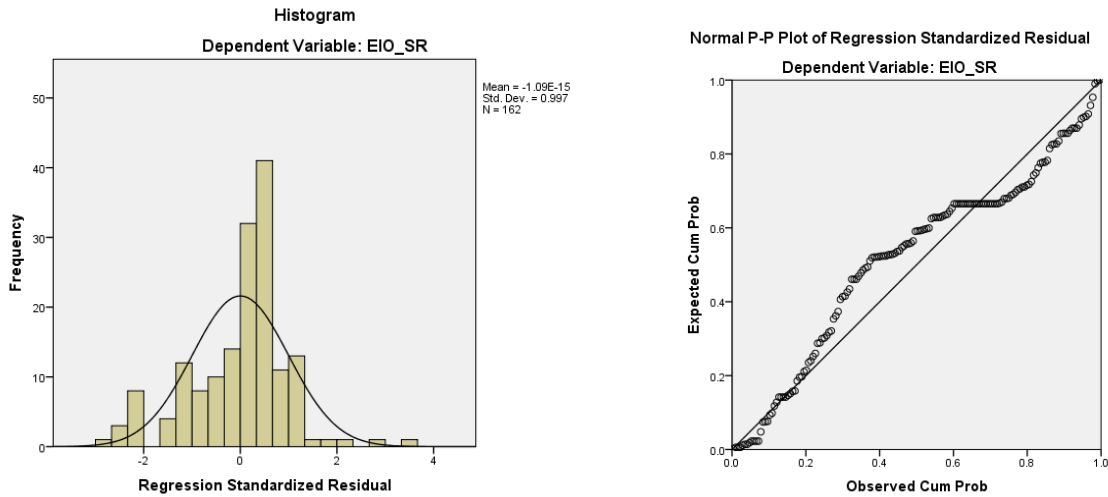


Figure (50) Results of Direct Effect of BIP on EIO

7.7.2.1.4. The Innovation Human Drivers (IHD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if IHD_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of $R=0.459$ suggests a positive relationship between IHD_{SR} and EIO_{SR}. Also, the $R^2=0.210$, which indicates an acceptable level of goodness in this model, where 21% of the variance of EIO_{SR} could be explained by IHD_{SR}. Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because $F(1,160)=42.611$ at significant value $p<0.01$. Finally, $b_1=1.266$, $b_2=0.564$, and $t(1,160)=6.528$ with Beta positive value $=0.459$ indicates that a higher level of Innovation Human Drivers might increase the Emergence of Innovation Outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.266 + 0.564 \text{IHD}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.459 ^a	.210	.205	1.48184	.210	42.611	1	160	.000

a. Predictors: (Constant), IHD_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	93.568	1	93.568	42.611	.000 ^b
	Residual	351.334	160	2.196		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), IHD_SR

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.266	.488		2.592	.010	.302	2.231					
IHD_SR	.564	.086	.459	6.528	.000	.394	.735	.459	.459	.459	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	IHD_SR
1	1	1.971	1.000	.01	.01
	2	.029	8.270	.99	.99

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.8315	6.4436	4.3628	.76234	162
Residual	-4.95207	3.78745	.00000	1.47723	162
Std. Predicted Value	-3.320	2.730	.000	1.000	162
Std. Residual	-3.342	2.556	.000	.997	162

a. Dependent Variable: EIO_SR

Table (24) Results of Direct Effect of IHD on EIO

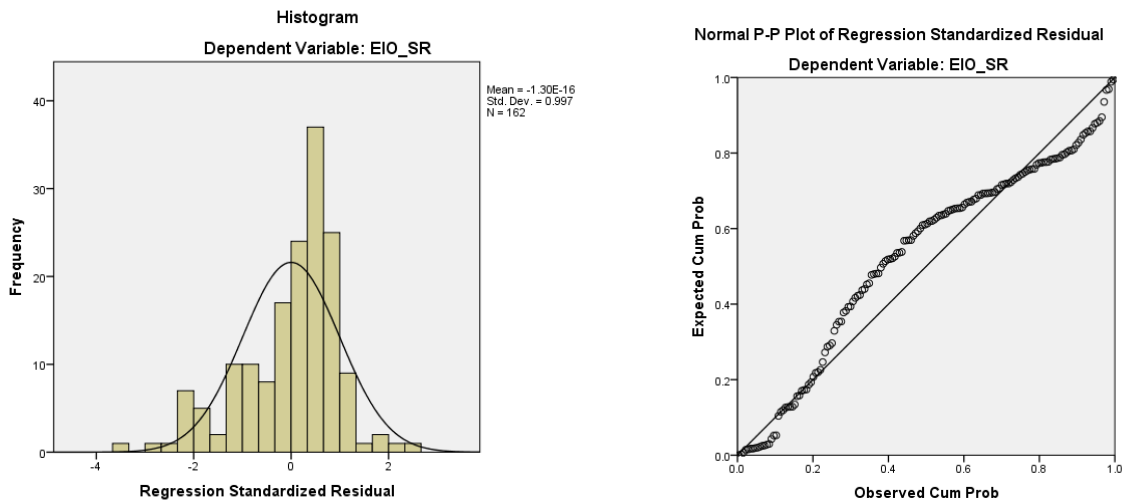


Figure (51) Results of Direct Effect of IHD on EIO

7.7.2.1.5. The Organisation Behaviour (OB_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if OB_{SR} significantly predicted EIO_{SQRT}. The result shown in the tables below indicated that the coefficient of $R=0.493$ suggests a positive relationship between OB_{SR} and EIO_{SR}. Also, the $R^2=0.243$, which indicates an acceptable level of

goodness in this model, were 24% of the variance of EIO_{SR} could be explained by OB_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 51.393 at significant value p< 0.01. Finally, b₁= 1.741, b₂=0.686, and t=7.169 with Beta positive value =0.493 indicate that a higher level of Organization Behaviour might increase the Emergence of Innovation Outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.741 + 0.686 \text{ OB}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.493 ^a	.243	.238	1.45073	.243	51.393	1	160	.000

a. Predictors: (Constant), OB_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.163	1	108.163	51.393	.000 ^b
	Residual	336.738	160	2.105		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), OB_SR

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.741	.383		4.547	.000	.985	2.498					
OB_SR	.686	.096	.493	7.169	.000	.497	.876	.493	.493	.493	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OB_SR
1	1	1.955	1.000	.02	.02
	2	.045	6.568	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.4278	6.1472	4.3628	.81965	162
Residual	-4.57302	3.79282	.00000	1.44622	162
Std. Predicted Value	-2.361	2.177	.000	1.000	162
Std. Residual	-3.152	2.614	.000	.997	162

a. Dependent Variable: EIO_SR

Table (25) Results of Direct Effect of OB on EIO

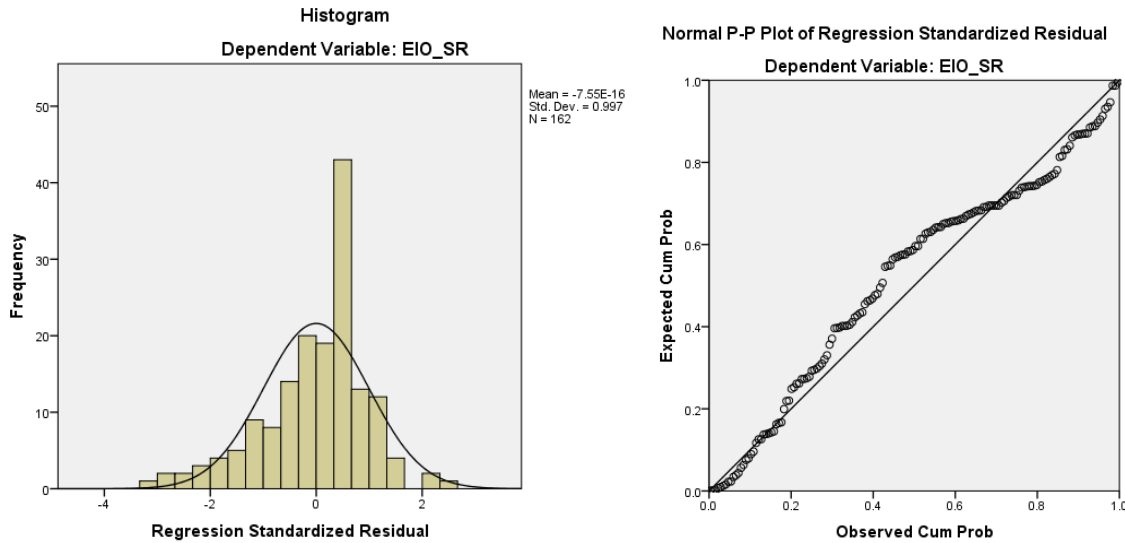


Figure (52) Results of Direct Effect of OB on EIO

7.7.2.1.6. Environment Readiness (ER_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if ER_{SR} significantly predicted EIO_{SR} . The result shown in the tables below indicated that the coefficient of $R=0.469$ suggests a positive relationship between ER_{SR} and EIO_{SR} . Also, the $R^2=0.220$, which indicates an acceptable level of goodness in this model, were 22% of the variance of EIO_{SR} could be explained by ER_{SR} . Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because of $F=45.061$ at significant value $p<0.01$. Finally, $b_1=1.382$, $b_2=0.987$ and $t=6.713$ with Beta positive value $=0.469$ indicates that a higher level of Environment Readiness might increase the Emergence of innovation outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.382 + 0.987 \text{ER}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.469 ^a	.220	.215	1.47296	.220	45.061	1	160	.000

a. Predictors: (Constant), ER_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.765	1	97.765	45.061	.000 ^b
	Residual	347.136	160	2.170		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), ER_SR

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.382	.459		3.011	.003	.475	2.288					
ER_SR	.987	.147	.469	6.713	.000	.696	1.277	.469	.469	.469	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	ER_SR
1	1	1.968	1.000	.02	.02
	2	.032	7.803	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.3676	6.3984	4.3628	.77926	162
Residual	-4.71442	3.45438	.00000	1.46838	162
Std. Predicted Value	-2.560	2.612	.000	1.000	162
Std. Residual	-3.201	2.345	.000	.997	162

a. Dependent Variable: EIO_SR

Table (26) Results of Direct Effect of ER on EIO

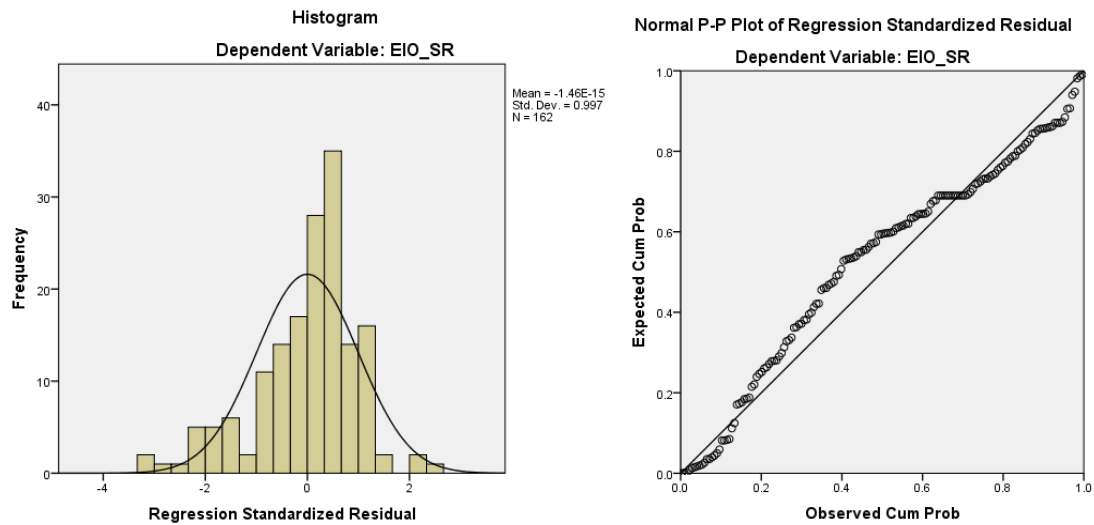


Figure (53) Results of Direct Effect of ER on EIO

7.7.2.1.7. The Innovation System Drivers (ISD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if ISD_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of $R=0.523$ suggests a positive relationship between ISD_{SR} and EIO_{SR}. Also, the $R^2=0.273$, which indicates an acceptable level of goodness in

this model, were 27% of the variance of EIO_{SR} could be explained by ISD_{SR} . Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because of $F=60.210$ at significant value $p < 0.01$. Finally, $b_1= 1.285$, $b_2=0.643$ and $t=7.760$ with Beta positive value $=0.523$ indicates that higher of Innovation System Drivers might increase the Emergence of innovation outcomes in the public sector higher education service providers. Below is the prediction equation:

$$EIO_{SR} = 1.285 + 0.643 ISD_{SR}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.523 ^a	.273	.269	1.42139	.273	60.210	1	160	.000

a. Predictors: (Constant), ISD_{SR}

b. Dependent Variable: EIO_{SR}

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	121.646	1	121.646	60.210	.000 ^b
	Residual	323.256	160	2.020		
	Total	444.902	161			

a. Dependent Variable: EIO_{SR}

b. Predictors: (Constant), ISD_{SR}

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.285	.412		3.120	.002	.472	2.099					
ISD_SR	.643	.083	.523	7.760	.000	.479	.806	.523	.523	.523	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	ISD_SR
1	1	1.963	1.000	.02	.02
	2	.037	7.241	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9275	6.4608	4.3628	.86923	162
Residual	-4.61111	3.05096	.00000	1.41697	162
Std. Predicted Value	-2.802	2.414	.000	1.000	162
Std. Residual	-3.244	2.146	.000	.997	162

a. Dependent Variable: EIO_SR

Table (27) Results of Direct Effect of ISD on EIO

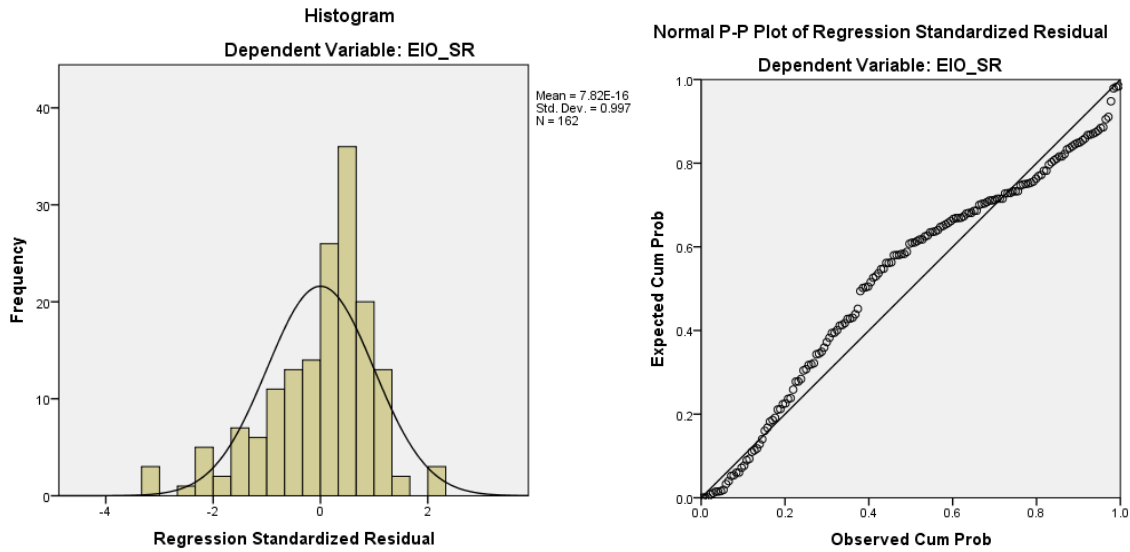


Figure (54) Results of Direct Effect of ISD on EIO

7.7.2.1.8. The Emergence of Innovation Drivers (EID_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}). Global effect

Linear regression analysis was used to test if EID_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of $R=0.515$ suggests a positive relationship between EID_{SR} and EIO_{SR}. Also, the $R^2= 0.265$, which indicates an acceptable level of goodness in this model, were 27% of the variance of EIO_{SR} could be explained by EID_{SR}. Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because of $F= 57.819$ at significant value $p< 0.01$. Finally, $b_1= 1.290$, $b_2=0.445$ and $t=7.604$ with Beta positive value $=0.515$ indicates that a higher of Emergence of Innovation Drivers at the micro-level might

increase the Emergence of innovation outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.290 + 0.445 \text{EID}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.515 ^a	.265	.261	1.42917	.265	57.819	1	160	.000

a. Predictors: (Constant), EID_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118.097	1	118.097	57.819	.000 ^b
	Residual	326.805	160	2.043		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), EID_SR

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.290	.419		3.077	.002	.462	2.119					
EID_SR	.445	.059	.515	7.604	.000	.329	.561	.515	.515	.515	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	EID_SR
1	1	1.963	1.000	.02	.02
	2	.037	7.333	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.7344	6.4295	4.3628	.85646	162
Residual	-4.93474	3.28404	.00000	1.42473	162
Std. Predicted Value	-3.069	2.413	.000	1.000	162
Std. Residual	-3.453	2.298	.000	.997	162

a. Dependent Variable: EIO_SR

Table (28) Results of Direct Effect of EID on EIO

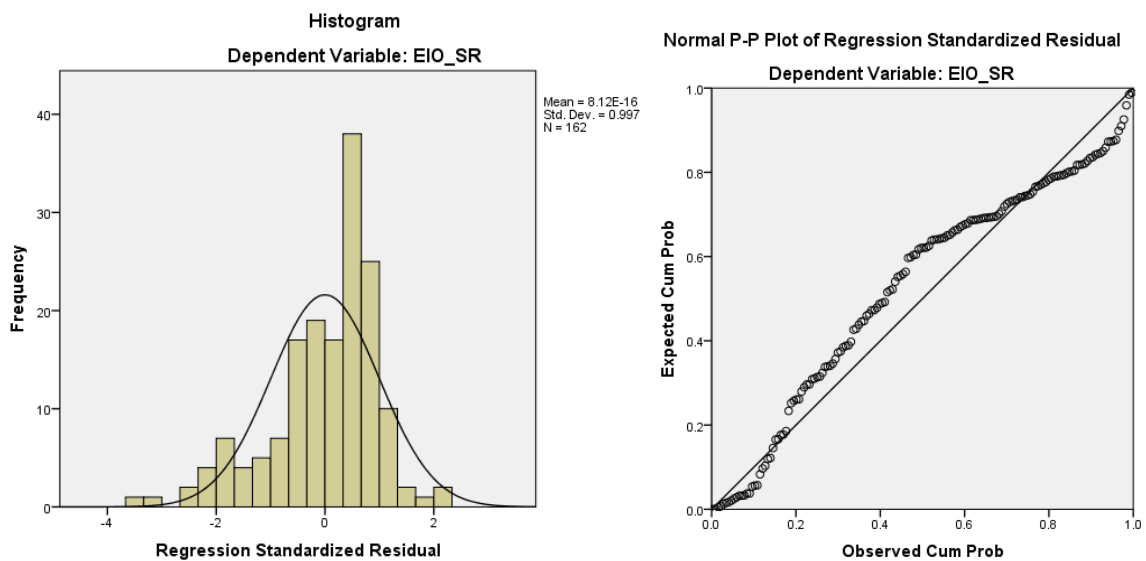


Figure (55) Results of Direct Effect of EID on EIO

7.7.2.1.9. Cultural Intelligence (CQ_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}).

Linear regression analysis was used to test if CQ_{SR} significantly predicted EIO_{SR}. The result shown in the tables below indicated that the coefficient of R=0.488 suggests a positive relationship between CQ_{SR} and EIO_{SR}. Also, the R²= 0.238, which indicates an acceptable level of goodness in this model, were 24% of the variance of EIO_{SR} could be explained by CQ_{SR}. Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} well because of F= 49.933 at significant value p< 0.01. Finally, b₁= 1.709, b₂=0.902 and t=7.066 with Beta positive value =0.488 indicates that a higher of Cultural Intelligence might increase the Emergence of innovation outcomes in the public sector higher education service providers. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 1.709 + 0.0902 \text{ CQ}_{\text{SR}}$$

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.488 ^a	.238	.233	1.45577	.238	49.933	1	160	.000

a. Predictors: (Constant), CQ_SR

b. Dependent Variable: EIO_SR

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.820	1	105.820	49.933	.000 ^b
	Residual	339.082	160	2.119		
	Total	444.902	161			

a. Dependent Variable: EIO_SR

b. Predictors: (Constant), CQ_SR

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.709	.393		4.352	.000	.933	2.484					
CQ_SR	.902	.128	.488	7.066	.000	.650	1.154	.488	.488	.488	1.000	1.000

a. Dependent Variable: EIO_SR

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CQ_SR
1	1	1.957	1.000	.02	.02
	2	.043	6.717	.98	.98

a. Dependent Variable: EIO_SR

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.6095	6.2886	4.3628	.81072	162
Residual	-5.15539	5.48053	.00000	1.45124	162
Std. Predicted Value	-2.163	2.376	.000	1.000	162
Std. Residual	-3.541	3.765	.000	.997	162

a. Dependent Variable: EIO_SR

Table (29) Results of Direct Effect of CQ on EIO

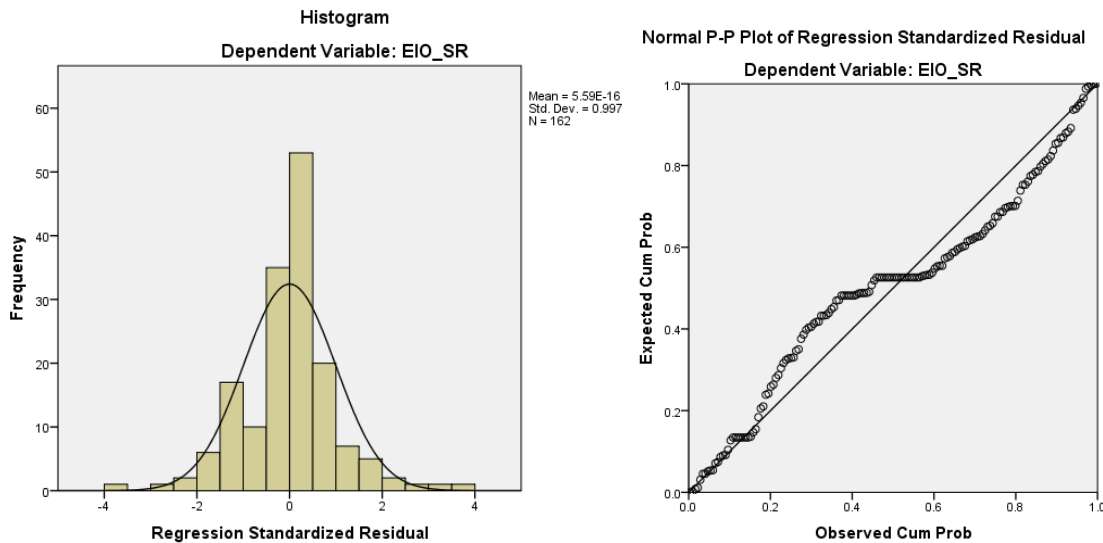


Figure (56) Results of Direct Effect of CQ on EIO

7.7.2.1.10. Conclusion

Based on the provided results, the independent variables have significantly predicted the dependent variable. This conclusion means that an increase in the independent variable (Emergence of Innovation Drivers) will lead to an increase in the dependent variable (Emergence of Innovation Outcomes), which leads to accepting the research hypothesis (H1, H2, and H3). These unique findings are showing a level of significance in this research conceptual framework, philosophy, approach, design, methodology, and method that successfully constructed the variables and connected them through unidirectional connections. Such promising positive associations of the variables are encouraging to further the investigation to regression level for hypotheses further validations. Below table provides a summary of the regression tests for the direct relationship between the variables.

No	Independent Variable	Dependent Variable	R	R ²	F	t	Beta	Prediction Equation
1	EE _{SR}	EIO _{RS}	0.370	0.137	25.343	5.034	0.370	EIO_{SR} = 1.945 + 0.673 EE_{SR}
2	LMS _{RS}	EIO _{RS}	0.420	0.176	34.207	5.849	0.420	EIO_{SR} = 2.288 + 0.705 LMS_{SR}
3	BIP _{SR}	EIO _{RS}	0.368	0.135	25.072	5.007	0.368	EIO_{SR} = 1.916 + 0.744 BIP_{SR}
4	IHD _{SR}	EIO _{RS}	0.459	0.210	42.611	6.528	0.459	EIO_{SR} = 1.266 + 0.564 IHD_{SR}
5	OB _{SR}	EIO _{RS}	0.493	0.243	51.393	7.169	0.493	EIO_{SR} = 1.741 + 0.686 OB_{SR}
6	ER _{SR}	EIO _{RS}	0.469	0.220	45.061	6.713	0.469	EIO_{SR} = 1.382 + 0.987 ER_{SR}
7	ISD _{SR}	EIO _{RS}	0.523	0.273	60.210	7.760	0.523	EIO_{SR} = 1.285 + 0.643 ISD_{SR}
8	EID _{SR}	EIO _{RS}	0.515	0.265	57.819	7.604	0.515	EIO_{SR} = 1.290 + 0.445 EID_{SR}
9	CQ _{SR}	EIO _{RS}	0.488	0.238	49.933	7.066	0.488	EIO_{SR} = 1.709 + 0.902 CQ_{SR}

Table (30) Regression Summary for the Direct Relationship between the variables

7.7.2.2. Module (2) : CQ as a Moderator, the effect of CQ as a moderator on the relationships between the variables:

In this section, CQ will be used as a moderator on the effect between the identified independents variables and the dependent variable. If CQ is significantly acting as a moderator, a prediction equation will be developed accordingly.

7.7.2.2.1. The Employee Empowerment (EE_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the EE or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the EE_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator on the interaction between EE_{SR} and EIO_{SR}. The first entry was EIO_{SR}, the second entry was EE_{SR}, and the third entry was the assumed moderator CQ_{SR}. The results showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, which means that the moderation interaction is significant through the whole model. The coefficient of $R=0.579$ suggests a positive relationship between EE_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.335$ which indicates an acceptable level of goodness in this model was 34% of the variance of EIO_{SR_REF} could be explained by EE_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(3,159)=26.526$ at significant value $p<0.01$. Finally, Beta value for EE_{SR} = 0.5009 with $t(3,159)=4.1504$, Beta value for CQ_{SR} = 0.8052 with $t(3,159)=6.5777$, and Beta value for the the interaction (EE_{SR} * CQ_{SR}) = -0.2420 with $t(3,159)=-2.1489$ indicates that higher of EE_{SR} moderated by CQ_{SR} will cause a decrease in EIO_{SR}.

In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in Employee Empowerment. Also, less level of Cultural Intelligence might cause a higher effect of Employee Empowerment on the Emergence of Innovation outcomes in the public sector. Such significant model shows that CQ might act as a moderator for the model as it is

correlated to both EE_{SR} and EIO_{SR} that might consider CQ_{SR} as not a causal result. Hence, to increase the impact of EE_{SR} on EIO_{SR} , it requires a moderate level of Cultural Intelligence as an external factor to the whole model to have a better Emergence of Innovation outcomes in the public sector higher education service providers. This result is questionable and might not be considered at this stage until the test of the CQ effect as mediator take place in the next test. Below is the prediction equation.

$$EIO_{SR} = 4.4019 + 0.5009 EE_{SR} + 0.8052 CQ_{SR} - 0.2420 EE_{SR} * CQ_{SR}$$

OUTCOME VARIABLE:											
EIO_SR											
Model Summary											
R		R-sq		MSE		F		df1		df2	p
.5788		.3350		1.8727		26.5256		3.0000		158.0000	.0000
Model											
coeff		se		t		p		LLCI		ULCI	
constant	4.4019	.1090		40.3665		.0000		4.1865		4.6173	
EE_SR	.5009	.1207		4.1504		.0001		.2625		.7392	
CQ_SR	.8052	.1224		6.5777		.0000		.5634		1.0470	
Int_1	-.2420	.1126		-2.1489		.0332		-.4645		-.0196	
Product terms key:											
Int 1 :		EE_SR	x	CQ_SR							

The slope of EE_{SR} predicting EIO_{SR} at each level of CQ_{SR} : (centered data)

Conditional effects of the focal predictor at values of the moderator(s) :						
CQ_SR	Effect	se	t	p	LLCI	ULCI
-1.0017	.7433	.1599	4.6489	.0000	.4275	1.0591
.3387	.4189	.1289	3.2508	.0014	.1644	.6734
.7174	.3272	.1494	2.1896	.0300	.0321	.6224

Table (31) Results of CQ as a Moderator Effect of EE on EIO

- 1- **Low CQ_{SR} effect on EE_{SR} to EIO_{SR}:** $b=0.74$, $t=4.64$, $p<0.01$:for low CQ_{SR}, there is a significant relationship between EE_{SR} and EIO_{SR} as each unit of EE_{SR} provides 4.64 points on EIO_{SR}
- 2- **Average CQ_{SR} effect on EE_{SR} to EIO_{SR}:** $b=0.42$, $t=3.3$, $p<0.01$:for average CQ_{SR}, there is a significant relationship between EE_{SR} and EIO_{SR} as each unit of EE_{SR} provides 3.3 points on EIO_{SR}
- 3- **High CQ_{SR} effect on EE_{SR} to EIO_{SR}:** $b=0.33$, $t=2.2$, $p<0.01$: for high CQ_{SR}, there is a significant relationship between EE_{SR} and EIO_{SR} as each unit of EE_{SR} provides 2.2 points on EIO_{SR}.

These results show that CQ_{SR}, as a moderator, has a decreasing effect on EE_{SR} predicting EIO_{SR}. This means that when CQ_{SR} is an independent variable (as an external effect) on the Employee Empowerment might lead to a decrease in the emergence of innovation outcomes in the public sector higher education service providers.

7.7.2.2.2. The Line Manager Support (LMS_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the LMS or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the LMS_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between LMS_{SR} and EIO_{SR}. The first entry was EIO_{SR}, the second entry was LMS_{SR}, and the third entry was the assumed moderator CQ_{SR}. The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables,

but not the interaction as zero does exist which means that the moderation interaction is not significant even though the whole model is significant. The coefficient of $R=0.585$ suggests a positive relationship between LMS_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.343$ which indicates an acceptable level of goodness in this model was 34% of the variance of EIO_{SR} could be explained by LMS_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(3,158)=27.446$ at significant value $p<0.01$. Finally, $b=0.930$ and Beta value for $LMS_{SR}=0.5554$ with $t(3,159)=2.731$, $b=1.168$ and Beta value for $CQ_{SR}=0.632$ with $t(3,158)=3.251$ with all values at significant value $p<0.01$. Finally, $b=-0.138$ and Beta value for the interaction ($LMS_{SR} * CQ_{SR}$) = -0.362 with $t(3,158)=-1.203$ that is not significant at $p=0.23$, which indicates that the interactions between LMS_{SR} EIO_{SR} is not moderated by CQ_{SR} . Such significant model shows that CQ_{SR} might not act as a moderator for the model as it is correlated to both LMS_{SR} and EIO that might consider CQ_{SR} as a causal result, which will be investigated through testing CQ_{SR} effect as a mediator on this model.

OUTCOME VARIABLE:											
EIO_SR											
Model Summary											
R		R-sq		MSE		F		df1		df2	p
.5853		.3426		1.8512		27.4455		3.0000		158.0000	.0000
Model											
coeff		se		t		p		LLCI		ULCI	
constant		4.3913		.1095		40.1061		.0000		4.1750 4.6075	
LMS_SR		.5246		.1124		4.6672		.0000		.3026 .7467	
CQ_SR		.7629		.1227		6.2195		.0000		.5206 1.0052	
Int_1		-.1375		.1143		-1.2030		.2308		-.3633 .0883	
Product terms key:											
Int 1 :		LMS SR		x		CQ SR					

Table (32) Results of CQ as a Moderator Effect of LMS on EIO

These results show that CQ_{SR} is not acting as a moderator on LMS_{SR} predicting EIO_{SR} as the interaction between LMS_{SR} and CQ_{SR} was not significant. This means that when CQ_{SR} is an independent variable (as an external effect) on the Line Manager Support, this might lead to not support the Emergence of Innovation Outcomes. This is a noticeable gap raised by this finding when systems include employees from several cultural backgrounds; such environment might not contribute in increasing the emergence of innovation outcomes in the public sector higher education service providers if the cultural intelligence does not interact with the line manager support.

7.7.2.2.3. The Board of Innovation Provision (BIP_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the BIP or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the BIP_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between BIP_{SR} and EIO_{SR} . The first entry was EIO_{SR} , the second entry was BIP_{SR} , and the third entry was the assumed moderator CQ_{SR} . The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, but not the interaction value as zero does exists which means that the moderation interaction is not significant even though the whole model is significant. The coefficient of $R=0.5439$ suggests a positive relationship between BIP_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.2959$ which indicates an acceptable level of goodness in this model was 30% of the variance of EIO_{SR} could be explained by BIP_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is

predicting the dependent variable EIO_{SR} well because of $F(3,159) = 22.1310$ at significant value $p < 0.01$. Finally, Beta value for BIP_{SR} = 0.442 with $b = 0.894$ and $t(3,159) = 2.584$, Beta value for CQ_{SR} = 0.701 with $b = 1.295$ and $t(3,159) = 3.050$, and Beta value for the the interaction (BIP_{SR} * CQ_{SR}) = -0.414 with $b = -0.164$ and $t(3,159) = -1.319$ that is not significant at $p = 0.23$, which indicates the interactions between BIP_{SR} and EIO_{SR} is not moderated by CQ_{SR}. Such significant model shows that CQ might not be acting as a moderator for the model as it is correlated to both BIP and EIO that might consider CQ as a causal result, which will be investigated through testing CQ effect as a mediator on this model.

OUTCOME VARIABLE:												
EIO_SR												
Model Summary												
R		R-sq		MSE		F		df1		df2	p	
.5439		.2959		1.9827		22.1310		3.0000		158.0000		.0000
Model												
coeff		se		t		p		LLCI		ULCI		
constant	4.4012	.1144		38.4716		.0000		4.1752		4.6271		
BIP_SR	.4115	.1511		2.7238		.0072		.1131		.7099		
CQ_SR	.7561	.1303		5.8034		.0000		.4988		1.0134		
Int_1	-.1639	.1243		-1.3187		.1892		-.4093		.0816		
Product terms key:												
Int 1	:	BIP SR		x		CQ SR						

Table (33) Results of CQ as a Moderator Effect of BIP on EIO

These results show that CQ_{SR} is not acting as a moderator on BIP_{SR} predicting EIO_{SR} as the interaction between BIP_{SR} and CQ_{SR} was not significant. This means that when CQ_{SR} is an independent variable (as an external effect) on the Board of Innovation Provision, this might lead to not support the Emergence of Innovation Outcomes. This is a noticeable gap raised by this

finding when systems include employees from several cultural backgrounds; such environment might not contribute in increasing the emergence of innovation outcomes in the public sector if the Board of Innovation Provision does not interact with Cultural Intelligence. In addition, the BIP concept newness in the public sector higher education service providers might not adopt in a way that makes it a clear concept for those employees within this sector.

7.7.2.2.4. The Innovation Human Drivers (IHD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the IHD or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the IHD_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between IHD_{SR} and EIO_{SR}. The first entry was EIO_{SR}, the second entry was IHD_{SR}, and the third entry was the assumed moderator CQ_{SR}. The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, but not the interaction as zero does exists which means that the moderation interaction is not significant even though the whole model is significant. The coefficient of $R=0.6003$ suggests a positive relationship between IHD_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.3604$ which indicates an acceptable level of goodness in this model was 36% of the variance of EIO_{SR} could be explained by IHD_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(3,159)= 29.6760$ at significant value $p< 0.01$. Finally, Beta value for IHD_{SR} =0.640 and $b= 0.788$ with $t(3,159)= 3.609$, Beta value for CQ_{SR} = 0.782 and $b=1.445$ with $t(3,159)= 3.393$, and Beta value for the the interaction (IHD_{SR} *

$CQ_{SR} = -0.568$ and $b=0.133$ with $t(3,159) = -1.789$ indicates that higher of IHD_{SR} moderated by CQ_{SR} might not increase EIO_{SR} .

In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in IHD influence on EIO. Also, less level of Cultural Intelligence might cause a higher effect of IHD on the EIO. Such significant model shows that CQ_{SR} might not act as a moderator for the model as it is correlated to both IHD_{SR} and EIO_{SR} that might consider CQ_{SR} as a causal result. Hence, to increase the impact of IHD_{SR} on EIO_{SR} , it requires embedding the Cultural Intelligence into the Innovation Human drivers to have a better Emergence of Innovation outcomes in the public sector higher education service providers. This result is questionable and might not be considered at this stage until the test of the CQ_{SR} effect as mediator take place in the next test.

OUTCOME VARIABLE:												
EIO_SR												
Model Summary												
R		R-sq		MSE		F		df1		df2	p	
.6003		.3604		1.8010		29.6760		3.0000		158.0000		.0000
Model												
coeff		se		t		p		LLCI		ULCI		
constant	4.4094	.1086		40.5982		.0000		4.1949		4.6239		
IHD_SR	.3973	.0834		4.7642		.0000		.2326		.5620		
CQ_SR	.7167	.1229		5.8302		.0000		.4739		.9596		
Int_1	-.1327	.0742		-1.7889		.0755		-.2793		.0138		
Product terms key:												
Int_1 :		IHD_SR x		CQ_SR								

Table (34) Results of CQ as a Moderator Effect of IHD on EIO

These results show that CQ_{SR} is not acting as a moderator on IHD_{SR} predicting EIO_{SR} as the interaction between IHD_{SR} and CQ_{SR} was not significant. This means that when CQ_{SR} is an independent variable (as an external effect) on the Innovation Human Drivers might not lead to support the Emergence of Innovation Outcomes. This is a noticeable gap raised by this finding when systems include employees from several cultural backgrounds; such environment might not contribute in increasing the emergence of innovation outcomes as CQ is an external factor in the public sector higher education service providers.

7.7.2.2.5. The Organisation Behaviour (OB_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the OB or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the OB_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between OB_{SR} and EIO_{SR}. The first entry was EIO_{SR}, the second entry was OB_{SR}, and the third entry was the assumed moderator CQ_{SR}. The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, which means that the moderation interaction is significant. The coefficient of R=0.641 suggests a positive relationship between OB_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the R²=0.411 which indicates an acceptable level of goodness in this model as 41% of the variance of EIO_{SR} could be explained by OB_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 36.787 at significant value p< 0.01. Finally, Beta value for OB_{SR} =0.795 and b=1.107 with t= 4.603, Beta value for CQ_{SR} = 0.820 and

b= 1.517 with t= 4.433, and Beta value for the the interaction ($OB_{SR} * CQ_{SR}$) = -0.665 and b=-0.206 with t=-2.457 indicates that higher level of OB_{SR} moderated by CQ_{SR} might not increase EIO_{SR} .

In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in Organisation Behaviour impact on the Emergence of Innovation Outcomes. Also, less level of Cultural Intelligence might cause a higher effect of Organisation Behaviour on the Emergence of Innovation Outcomes in the public sector higher education service providers. Such significant model shows that CQ_{SR} might act as a moderator for the model that has a negative influence when considered as an outer norm and not infused in the organisation. Hence, to increase the impact of OB_{SR} on EIO_{SR} , it requires a moderate level of Cultural Intelligence to have a better Emergence of Innovation Outcomes in the public sector higher education service providers. From another point of view, organisation limitations might be considered an innovation trigger to meet internal and external needs. However, this result is questionable and might not be considered at this stage until the test of the CQ_{SR} effect as mediator take place in the next test. Below is the prediction equation:

$$EIO_{SR} = 4.4148 + 0.5021 OB_{SR} + 0.7320 CQ_{SR} - 0.2055 OB_{SR} * CQ_{SR}$$

OUTCOME VARIABLE:													
EIO_SR													
Model Summary													
R		R-sq		MSE		F		df1		df2		p	
.6413		.4112		1.6578		36.7872		3.0000		158.0000		.0000	
Model													
coeff				se		t		p		LLCI		ULCI	
constant		4.4148		.1034		42.7151		.0000		4.2107		4.6189	
OB_SR		.5021		.0903		5.5623		.0000		.3238		.6803	
CQ_SR		.7320		.1162		6.3000		.0000		.5025		.9615	
Int_1		-.2055		.0837		-2.4566		.0151		-.3707		-.0403	
Product terms key:													
Int_1		:	OB_SR		x	CQ_SR							

The slope of OB_{SR} predicting EIO_{SR} at each level of CQ_{SR}: (centered data)

Conditional effects of the focal predictor at values of the moderator(s):						
CQ_SR	Effect	se	t	p	LLCI	ULCI
-1.0017	.7079	.1070	6.6180	.0000	.4967	.9192
.3387	.4325	.1010	4.2798	.0000	.2329	.6320
.7174	.3546	.1201	2.9533	.0036	.1175	.5918

Table (35) Results of CQ as a Moderator Effect of OB on EIO

- 1- **Low CQ_{SR} effect on OB_{SR} to EIO_{SR}:** b=0.70, t=6.62, p<0.01 :for low CQ_{SR}, there is a significant relationship between OB_{SR} and EIO_{SR} as each unit of OB_{SR} provides 6.62 points on EIO
- 2- **Average CQ_{SR} effect on OB_{SR} to EIO_{SR}:** b=0.43, t=4.28 p<0.01 :for average CQ_{SR}, there is a significant relationship between OB_{SR} and EIO_{SR} as each unit of OB_{SR} provides 4.28 points on EIO_{SR}
- 3- **High CQ_{SR} effect on OB_{SR} to EIO_{SR}:** b=0.35, t=2.95, p<0.01 :for high CQ_{SR}, there is a significant relationship between OB_{SR} and EIO_{SR} as each unit of OB_{SR} provides 2.95 points on EIO_{SR}

These results show that CQ_{SR} , as a moderator, has a decreasing effect on OB_{SR} predicting EIO_{SR} . This means that when CQ_{SR} is an independent variable (as an external effect) to the Organisational Behaviour, this might lead to a decrease in the emergence of innovation outcomes in the public sector higher education service providers. Adoption of CQ in Organisational Behaviour within the public sector higher education service providers as an embedded (not external) norm might lead to enhancing the organisational behaviour towards generating innovation.

7.7.2.2.6. Environment Readiness (ER_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}). where CQ_{SR} is not the causal result of the ER or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the ER_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between ER_{SR} and EIO_{SR} . The first entry was EIO_{SR} , the second entry was ER_{SR} , and the third entry was the assumed moderator CQ_{SR} . The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, but not the interaction as zero does exist which means that the moderation interaction is not significant even though the whole model is significant. The coefficient of $R=0.5975$ suggests a positive relationship between ER_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.3570$ which indicates an acceptable level of goodness in this model was 36% of the variance of EIO_{SR_REF} could be explained by ER_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F= 29.2435$ at significant value $p< 0.01$.

Finally, Beta value for ER_{SR} = 0.633 and $b = 1.333$ with $t = 3.343$, Beta value for CQ_{SR} = 0.748 and $b = 1.383$ with $t = 3.109$, and Beta value for the interaction ($ER_{SR} * CQ_{SR}$) = -0.547 and $b = -0.232$ with $t = -1.611$ indicates that higher of ER_{SR} moderated by CQ_{SR} might not increase EIO_{SR} . In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in Environment Readiness effect on Emergence of Innovation Outcomes. Also, less level of Cultural Intelligence might cause a higher effect of Environment Readiness on the Emergence of Innovation Outcomes in the public sector higher education service providers. Such significant model shows that CQ_{SR} might not act as a moderator for this model as it is correlated to both ER_{SR} and EIO_{SR} that might consider CQ_{SR} as a causal result. Hence, to increase the impact of ER_{SR} on EIO_{SR} , it requires a moderate level of Cultural Intelligence to have a better Emergence of Innovation outcomes in the public sector higher education service providers. From another point of view, environment limitations might be considered as an innovation trigger to meet the internal and external needs. However, this result is questionable and might not be considered at this stage until the test of the CQ_{SR} effect as mediator take place in the next test.

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.5975	.3570	1.8105	29.2435	3.0000	158.0000			.0000
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	4.4154	.1106	39.9049	.0000	4.1969	4.6339			
ER_SR	.6497	.1508	4.3089	.0000	.3519	.9475			
CQ_SR	.6820	.1248	5.4648	.0000	.4355	.9284			
Int_1	-.2321	.1440	-1.6113	.1091	-.5165	.0524			
Product terms key:									
Int_1 :	ER_SR	x	CQ_SR						

Table (36) Results of CQ as a Moderator Effect of ER on EIO

These results show that CQ_{SR} is not acting as a moderator on ER_{SR} predicting EIO_{SR} , which means that when CQ_{SR} is an independent variable (as an external effect) to Environment Readiness, this will lead to a decrease in the emergence of innovation outcomes. This is a noticeable gap raised by this finding that environments that have CQ_{SR} as an external influencer might not support the emergence of innovation outcomes within the public sector higher education service providers.

7.7.2.2.7. The Innovation System Drivers (ISD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is not the causal result of the ISD or EIO

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the ISD_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between ISD_{SR} and EIO_{SR} . The first entry was EIO_{SR} , the second entry was ISD_{SR} , and the third entry was the assumed moderator CQ_{SR} . The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, which means that the moderation interaction is significant. The coefficient of $R=0.6472$ suggests a positive relationship between ISD_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.4189$ which indicates an acceptable level of goodness in this model was 42% of the variance of EIO_{SR} could be explained by ISD_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F= 37.9636$ at significant value $p< 0.01$. Finally, Beta value for $ISD_{SR}=0.797$ and $b=0.979$ with $t= 4.554$, Beta value for $CQ_{SR}= 0.827$ and $b=1.529$ with $t= 3.990$, and Beta value for the interaction ($ISD_{SR} * CQ_{SR}$) = -0.685 and $b=-0.177$ with $t= -2.318$ indicates that higher of ISD_{SR} moderated by CQ_{SR} might not increase EIO_{SR} .

In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in ISD predicting EIO. Also, less level of Cultural Intelligence might cause a higher effect of ISD on EIO in the public sector higher education service providers. Such significant model shows that CQ_{SR} might act as a moderator for this model as it is correlated to both ISD_{SR} and EIO_{SR} that might consider CQ_{SR} as not a causal result. Hence, to increase the impact of ISD_{SR_REF} on EIO_{SR_REF}, it requires a moderate level of Cultural Intelligence to have a better Emergence of Innovation outcomes in the public sector higher education service providers. From another point of view, system limitations might be considered an innovation trigger to meet the internal and external needs. However, this result is questionable and might not be considered at this stage until the test of the CQ_{SR} effect as mediator take place in the next test. Below is the predicting equation:

$$\text{EIO}_{\text{SR}} = 4.4230 + 0.4595 \text{ ISD}_{\text{SR}} + 0.6835 \text{ CQ}_{\text{SR}} - 0.1766 \text{ ISD}_{\text{SR}} * \text{CQ}_{\text{SR}}$$

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.6472	.4189	1.6363	37.9636	3.0000	158.0000			.0000
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	4.4230	.1038	42.6072	.0000	4.2180	4.6280			
ISD_SR	.4594	.0812	5.6546	.0000	.2989	.6198			
CQ_SR	.6835	.1169	5.8487	.0000	.4527	.9143			
Int_1	-.1766	.0762	-2.3178	.0217	-.3271	-.0261			
Product terms key:									
Int_1	:	ISD_SR	x	CQ_SR					

The slope of ISD_{SR} predicting EIO_{SR} at each level of CQ_{SR}: (centered data)

Conditional effects of the focal predictor at values of the moderator(s):						
CQ_SR	Effect	se	t	p	LLCI	ULCI
-1.0017	.6363	.0938	6.7834	.0000	.4510	.8215
.3387	.3996	.0922	4.3360	.0000	.2176	.5816
.7174	.3327	.1104	3.0140	.0030	.1147	.5507

Table (37) Results of CQ as a Moderator Effect of ISD on EIO

- 1- **Low CQ_{SR} effect on ISD_{SR} to EIO_{SR}:** $b=0.64$, $t=6.78$, $p<0.01$:for low CQ_{SR}, there is a significant relationship between ISD_{SR} and EIO as each unit of ISD_{SR} provides 6.78 points on EIO
- 2- **Average CQ effect on ISD_{SR} to EIO_{SR}:** $b=0.40$, $t=4.34$ $p< 0.01$: for average CQ_{SR}, there is a significant relationship between ISD_{SR} and EIO as each unit of ISD_{SR} provides 4.34 points on EIO
- 3- **High CQ_{SR} effect on ISD_{SR} to EIO_{SR}:** $b=0.33$, $t=3.01$, $p< 0.01$: for high CQ_{SR}, there is a significant relationship between ISD_{SR} and EIO as each unit of ISD_{SR} provides 3.01 points on EIO_{SR}

These results show that CQ_{SR}, as a moderator, has a decreasing effect on ISD_{SR} predicting EIO_{SR}. This decreasing means that when we have CQ_{SR} as an external effect on the Innovation System Drivers (Environment Readiness and Organisation Behaviour), such effect will act negatively on the emergence of the innovation in the public sector higher education service providers. Also, such decreasing effect of CQ on the internal and external environment showing that absence of harmony between the two environments will have a negative influence on the emergence of innovation in the public sector. Adoption of CQ that links the internal environment (Organisations) and external environment (community/society) might lead to enhancing the opportunities in increasing the emergence of innovation in the public sector.

7.7.2.2.8. The Emergence of Innovation Drivers (EID_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}). The global effect, where CQ is not the causal result of the EID or EIO.

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes, model – 1) was used to test if the EID_{SR} significantly predicted EIO_{SR} using the CQ_{SR} as a moderator with the interaction between EID_{SR} and EIO_{SR}. The first entry was EIO_{SR}, the second entry was EID_{SR}, and the third entry was the assumed moderator CQ_{SR}. The result showed none of the Lower Confidence Intervals and the Upper Confidence Intervals includes zero for all entered variables, which means that the moderation interaction is significant. The coefficient of $R=0.633$ suggests a positive relationship between EID_{SR} and EIO_{SR} moderated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a moderator. Also, the $R^2=0.401$ which indicates an acceptable level of goodness in this model was 40% of the variance of EIO_{SR} could be explained by EID_{SR} moderated by CQ_{SR} with an increase from the previous case without CQ_{SR} as moderator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F= 35.214$ at significant value $p< 0.01$. Finally, Beta value for EID_{SR} =0.714 and $b=0.617$ with $t= 4.220$, Beta value for CQ_{SR} =0.0.743 and $b=1.373$ with $t=3.687$, and Beta value for the the interaction (EID_{SR} * CQ_{SR}) = -0.571 and $b=-101$ with $t= -1.984$ indicates that higher of EID_{SR} moderated by CQ_{SR} might not increase EIO_{SR}.

In other words, more increase in Cultural Intelligence from contextualising effect will not cause an increase in the EID on EIO. Also, less level of Cultural Intelligence might cause a higher effect of the EID on EIO in the public sector higher education service providers. Such significant model shows that CQ_{SR} might act as a moderator for the model as it is correlated to both EID_{SR} and

EIO_{SR} that might consider CQ_{SR} as not a causal result. Hence, to increase the impact of EID_{SR} on EIO_{SR}, it requires a moderate level of Cultural Intelligence to have a better Emergence of Innovation outcomes in the public sector. On the other hand, system limitations at the macro level might be considered an innovation trigger to meet the internal and external needs. However, this result is questionable and might not be considered at this stage until the test of the CQ_{SR} effect as mediator take place in the next test. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 4.4159 + 0.3189 \text{ EID}_{\text{SR}} + 0.6744 \text{ CQ}_{\text{SR}} - 0.1012 \text{ EID}_{\text{SR}} * \text{CQ}_{\text{SR}}$$

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
R		R-sq		MSE		F		df1	
								df2	
.6330		.4007		1.6875		35.2145		3.0000	
								158.0000	
Model									
coeff		se		t		p		LLCI	
								ULCI	
constant		4.4159		.1055		41.8476		.0000	
								4.2075	
EID_SR		.3189		.0579		5.5083		.0000	
								.2045	
CQ_SR		.6744		.1196		5.6401		.0000	
								.4382	
Int_1		-.1012		.0510		-1.9838		.0490	
								-.2020	
Product terms key:									
Int 1 :		EID SR		x		CQ SR			

- 1- **Low CQ_{SR} effect on EID_{SR} to EIO_{SR}:** $b=0.42$, $t=6.32$, $p<0.01$: for low CQ_{SR}, there is a significant relationship between EID_{SR} and EIO_{SR} as each unit of EID_{SR} provides 6.32 points on EIO_{SR}
- 2- **Average CQ_{SR} effect on EID_{SR} to EIO_{SR}:** $b=0.28$, $t=4.41$, $p<0.01$: for average CQ_{SR}, there is a significant relationship between EID_{SR} and EIO as each unit of EID_{SR} provides 4.41 points on EIO
- 3- **High CQ_{SR} effect on EID_{SR} to EIO_{SR}:** $b=0.25$, $t=3.23$, $p<0.01$: for high CQ_{SR}, there is a significant relationship between EID_{SR} and EIO_{SR} as each unit of EID_{SR} provides 3.23 points on EIO_{SR}

These results show that the effect of CQ_{SR} at the macro level is causing a decreasing influence on EID_{SR} predicting EIO_{SR}. CQ_{SR} as an independent factor (outer) is not positively supporting the emergence of innovation drivers to increase the emergence of innovation outcomes in the public sector higher education service providers. This unique result is suggesting to not consider CQ_{SR} as an independent influencer for the innovation system at micro and macro levels because of its negative influence on the results.

7.7.2.2.9. Conclusion

In testing the CQ effect as a moderator (external factor) on the relationships between independent (Emergence of Innovation Drivers) and dependent (Emergence of Innovation Outcomes) variables, there were either decreasing or no significant effect. In open businesses that in general have multicultural employees and customers, there is a need to not consider CQ as an

external factor of such a community. Such conclusion shows the need of having the CQ as a norm of the organisations in the public sector higher education service provider in order to create a balance between the internal and external environment towards innovation generation and adoption. These results suggest embedding the effect of CQ at the individual, group, organisational, and community levels, which encourages testing CQ under the mediator effect as will be shown in the next section. Below is the summary of the CQ moderator effect when applicable.

No	Independent Variable	Dependent Variable	CQ Moderator	Prediction Equation
1	EE _{SR}	EIO _{RS}	Yes Negative effect	$EIO_{SR} = 4.4019 + 0.5009 EE_{SR} + 0.8052 CQ_{SR} - 0.2420 EE_{SR} * CQ_{SR}$
2	LMS _{SR}	EIO _{RS}	No significant effect	Not applicable
3	BIP _{SR}	EIO _{RS}	No significant effect	Not applicable
4	IHD _{SR}	EIO _{RS}	No significant effect	Not applicable
5	OB _{SR}	EIO _{RS}	Yes Negative effect	$EIO_{SR} = 4.4148 + 0.5021 OB_{SR} + 0.7320 CQ_{SR} - 0.2055 OB_{SR} * CQ_{SR}$
6	ER _{SR}	EIO _{RS}	No significant effect	Not applicable
7	ISD _{SR}	EIO _{RS}	Yes Negative effect	$EIO_{SR} = 4.4230 + 0.4595 ISD_{SR} + 0.6835 CQ_{SR} - 0.1766 ISD_{SR} * CQ_{SR}$
8	EID _{SR}	EIO _{RS}	Yes Negative effect	$EIO_{SR} = 4.4159 + 0.3189 EID_{SR} + 0.6744 CQ_{SR} - 0.1012 EID_{SR} * CQ_{SR}$

Table (39) Summary of CQ as a Moderator Effect on the Variables

7.7.2.3. Module (3): CQ as a Mediator, the effect of CQ as a mediator on the relationships between the variables:

In this section, CQ will be used as a mediator on the effect between the identified independent variables and the dependent variable. If CQ is acting as a mediator, a prediction equation will be developed accordingly.

7.7.2.3.1. The Employee Empowerment (EE_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the EE and a causal antecedent of the EIO.

To test the mediation effect on this model; the first step will be running the linear regression and reporting the result of EE_{SR} prediction of the dependable variable EIO_{SR} . The second step will be linear regression and reporting the result of EE_{SR} prediction of the mediator CQ_{SR} . The final step will be hierarchical regression analysis through entering the EE_{SR} and then in the second level will be for the CQ_{SR} to study the prediction model.

1- EE_{SR} predicting EIO_{SR} . (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the EE_{SR} significantly predicted EIO_{SR} . For EE_{SR} the results showed that the Lower Confidence Interval $LLCI=0.4089$ and the Upper Confidence Interval $ULCI=0.9368$; which means zero does not lie between them, and hence, the effect is significant. The

coefficient of $R=0.3698$ suggests a positive relationship between EE_{SR} and EIO_{SR} . Also, the $R^2=0.1367$, which indicates an acceptable level of goodness in this model was 14% of the variance of EIO_{SR} could be explained by EE_{SR} . Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(1,160)=25.3429$ at significant value $p<0.01$. Finally, for EE_{SR} $t(160)=5.0342$ with Beta value $=0.6728$ at significant value $p<0.01$ which means that a higher level of Employee Empowerment might increase the Emergence of innovation outcomes in the public sector higher education service providers.

***** PROCESS Procedure for SPSS Version 3.3 *****									
Written by Andrew F. Hayes, Ph.D.					www.afhayes.com				
Documentation available in Hayes (2018).					www.guilford.com/p/hayes3				

Model	:	4							
Y	:	EIO_SR							
X	:	EE_SR							
M	:	CQ_SR							
Sample									
Size:	162								
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.3698	.1367	2.4004	25.3429	1.0000	160.0000			.0000
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.9452	.4954	3.9264	.0001	.9668	2.9236			
EE_SR	.6728	.1337	5.0342	.0000	.4089	.9368			

Table (40) EE_{SR} predicting EIO_{SR} . (Path c)

2- EE_{SR} predicting CQ_{SR} . (Path a)

Linear regression analysis was used to test is that the EE_{SR} significantly predicted CQ_{SR} .

The result indicated that the coefficient of $R=0.198$ suggests a weak positive relationship

between EE_{SR} and CQ_{SR} , which means that CQ_{SR} is related to EE_{SR} . Also, the $R^2 = 0.039$, which indicates an acceptable level of goodness in this model, were 4% of the variance of CQ_{SR} could be explained by EE_{SR} . Furthermore, based on ANOVA test results, this model is predicting the dependent variable EIO_{SR} because $F(1,160) = 6.536$ at significant value $p < 0.01$. Finally, $b = 0.195$ and $t(160) = 2.557$ with Beta positive value $= 0.198$ indicates that higher of EE_{SR} might increase the CQ_{SR} .

***** PROCESS Procedure for SPSS Version 3.3 *****									
Written by Andrew F. Hayes, Ph.D.								www.afhayes.com	
Documentation available in Hayes (2018).								www.guilford.com/p/hayes3	

Model	:	4							
Y	:	EIO_SR							
X	:	EE_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.1981	.0392	.7817	6.5358	1.0000	160.0000			.0115
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	2.2433	.2827	7.9346	.0000	1.6849	2.8016			
EE SR	.1950	.0763	2.5565	.0115	.0444	.3456			

Table (41) EE_{SR} predicting CQ_{SR} . (Path a)

3- EE_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the EE_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For EE_{SR} , the

results showed that the Lower Confidence Interval LLCI=0.2768 and the Upper Confidence Interval ULCI=0.7579; which means zero does not lie between them, and hence, the effect of the mediator is significant. For CQ_{SR}, the results showed that the Lower Confidence Interval LLCI=0.5531 and the Upper Confidence Interval ULCI=1.0418; which means zero does not lie between them and the effect of the mediator is significant. The coefficient of R=0.562 suggests a positive relationship between EE_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the R²=0.316 which indicates an acceptable level of goodness in this model were 32% of the variance of EIO_{SR} could be explained by EE_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F(2,159)= 36.646 at significant value p< 0.01. Finally, for EE_{SR} t (159) =4.247 with Beta value =0.284, and for CQ_{SR} t (159) =6.444 with Beta value = 0.431 with significant value p< 0.01(path b where M predicting Y). Also, the all effects of EE_{SR} on EIO_{SR} caused by CQ_{SR} showed that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 0.1563 + 0.5173 \text{EE}_{\text{SR}} + 0.7975 \text{CQ}_{\text{SR}}$$

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Documentation available in Hayes (2018).					www.guilford.com/p/hayes3				

Model	:	4							
Y	:	EIO_SR							
X	:	EE_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2	p		
	.5617	.3155	1.9153	36.6458	2.0000	159.0000	.0000		
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	.1563	.5224	.2992	.7651	-.8754	1.1880			
EE_SR	.5173	.1218	4.2475	.0000	.2768	.7579			
CQ_SR	.7975	.1237	6.4443	.0000	.5531	1.0418			

Table (42) EE_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks :**

CQ_{SR} has a dual effect as a moderator and mediator on EE_{SR} predicting EIO_{SR} as these three variables are related and distinct. Such an effect might occur when we use a variable that is correlated and has a significant causal result on both the independent and dependent variables (Beauchaine, Webster-Stratton, and Reid, 2005). This effect is explained as follows:

- CQ_{SR} as a moderator: is contextualising the influence of Employee Empowerment on the Emergence of Innovation in a weakening perspective as an outer effect on

the direct relation between EE_{SR} and EIO_{SR} . This result means that when CQ_{SR} is not considered as part of the Employee Empowerment, it has a weakening effect on the Emergence of Innovation Outcomes in the public sector higher education service providers.

- b. CQ_{SR} , as a mediator, is a better contributor to the impact of EE_{SR} on EIO_{SR} rather than being a moderator. The total effect of EE_{SR} on $EIO_{SR} = 0.6728$ has increased from the direct effect of EE_{SR} on $EIO_{SR} = 0.5173$ by the influence of the indirect effect EE_{SR} on $EIO_{SR} = 0.1555$ caused by CQ as a mediator. The increase of this higher impact of EE_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the EE_{SR} , and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of the Cultural Intelligence on Employee Empowerment will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. So path (a,b) is the better way to increase EIO_{SR} in the public sector higher education service providers through mediating the Employee Empowerment with Cultural Intelligence interaction.

Total effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.6728	.1337	5.0342	.0000	.4089	.9368	.4047	.3698
Direct effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.5173	.1218	4.2475	.0000	.2768	.7579	.3112	.2843
Indirect effect(s) of X on Y:							
Effect	BootSE	BootLLCI	BootULCI				
CQ_SR	.1555	.0792	.0145	.3261			

Table (43) Results of CQ as a Mediator Effect of EE on EIO

7.7.2.3.2. The Line Manager Support (LMS_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the LMS and a causal antecedent of the EIO.

To test the mediation effect on this model; the first step will be running the linear regression and reporting the result of LMS_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of LMS_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the LMS_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- LMS_{SR} predicting EIO_{SR}. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the LMS_{SR} significantly predicted EIO_{SR}. For LMS_{SR}, the results showed that the Lower Confidence Interval LLCI=0.4667 and the Upper Confidence Interval ULCI=0.9426; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.420$ suggests a positive relationship between LMS_{SR} and EIO_{SR}. Also, the $R^2=0.176$, which indicates an acceptable level of goodness in this model, as 18% of the variance of EIO_{SR} could be explained by LMS_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(1,160)=34.207$ at significant value $p<0.01$. Finally, for LMS_{SR} $b=0.747$ and $t(160)=5.8487$ with Beta value $=0.4197$ at significant value $p<0.01$ which means a higher level of Line Manager Support might increase the Emergence of innovation outcomes in the public sector higher education service providers.

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Documentation available in Hayes (2018).					www.guilford.com/p/hayes3				

Model	:	4							
Y	:	EIO_SR							
X	:	LMS_SR							
M	:	CQ_SR							
Sample									
Size:	162								
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.4197	.1761	2.2909	34.2074	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	2.2883	.3741	6.1170	.0000	1.5495	3.0271			
LMS_SR	.7047	.1205	5.8487	.0000	.4667	.9426			

Table (44) LMS_{SR} predicting EIO_{SR}. (Path c)

2- LMS_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test is that the LMS_{SR} traits significantly predicted CQ_{SR}. The result indicated that the coefficient of R=0.2342 suggests a weak positive relationship between LMS_{SR} and CQ_{SR}, which means that CQ_{SR} is related to LMS. Also, the R²= 0.0549, which indicates an acceptable level of goodness in this model, were 5% of the variance of CQ_{SR}, could be explained by LMS_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} because of F(1,160)= 9.2883 at significant value p< 0.01.

Finally, $b = 0.213$ and $t(1,160) = 3.0477$ with Beta positive value $= 0.2342$ indicates that higher of LMS_{SR} might increase the CQ_{SR} .

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Written by Andrew F. Hayes, Ph.D.						www.afhayes.com			
Documentation available in Hayes (2018).						www.guilford.com/p/hayes3			

Model	:	4							
Y	:	EIO_SR							
X	:	LMS_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.2342	.0549	.7690	9.2883	1.0000	160.0000		.0027	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	2.3176	.2167	10.6927	.0000	1.8895	2.7456			
LMS_SR	.2128	.0698	3.0477	.0027	.0749	.3506			

Table (45) LMS_{SR} predicting CQ_{SR} . (Path a)

3- LMS_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the LMS_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For LMS_{SR} , the results showed that the Lower Confidence Interval $LLCI = 0.3223$ and the Upper Confidence Interval $ULCI = 0.7630$; which means zero does not lie between them and the effect is significant. For CQ_{SR_REF} , the results showed that the Lower Confidence Interval

LLCI=0.5190 and the Upper Confidence Interval ULCI=1.0042; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.5801$ suggests a positive relationship between LMS_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3366$ which indicates an acceptable level of goodness in this model was 34% of the variance of EIO_{SR} could be explained by LMS_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(2,159)=40.3313$ at significant value $p<0.01$. Finally, for LMS_{SR} $b=0.5427$ and $t(2,159)=4.8640$ with Beta value $=0.3232$, and for CQ_{SR} $b=0.7616$ and $t(2,159)=6.2007$ with Beta value $=0.4120$ at significant value $p<0.01$ (path b where M predicting Y). Also, the all effects of LMS_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$EIO_{SR} = 0.5232 + 0.5427 LMS_{SR} + 0.7616 CQ_{SR}$$

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Written by Andrew F. Hayes, Ph.D.					www.afhayes.com				
Documentation available in Hayes (2018).					www.guilford.com/p/hayes3				

Model	:	4							
Y	:	EIO_SR							
X	:	LMS_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.5801	.3366	1.8564	40.3313	2.0000	159.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	.5232	.4410	1.1864	.2372	-.3477	1.3940			
LMS_SR	.5427	.1116	4.8640	.0000	.3223	.7630			
CQ_SR	.7616	.1228	6.2007	.0000	.5190	1.0042			
Standardized coefficients									
	coeff								
LMS_SR	.3232								
CQ_SR	.4120								

Table (46) LMS_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ_{SR}, as a mediator, is a better contributor to the impact of LMS_{SR} on EIO_{SR} rather than being a moderator. The total effect of LMS_{SR} on EIO_{SR} = 0.7047 has increased from the direct effect of LMS_{SR} on EIO_{SR} = 0.5427 by the influence of the indirect effect LMS_{SR} on EIO_{SR} = 0.1620 caused by CQ as a mediator. The increase of this higher impact of LMS_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the LMS_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of

the Cultural Intelligence on Line Manager Support will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. So path (a,b) is the better way to increase EIO in the public sector through mediating the Line Manager Support with Cultural Intelligence interaction.

Total effect of X on Y									
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs		
.7047	.1205	5.8487	.0000	.4667	.9426	.4239	.4197		
Direct effect of X on Y									
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs		
.5427	.1116	4.8640	.0000	.3223	.7630	.3264	.3232		
Indirect effect(s) of X on Y:									
Effect	BootSE	BootLLCI	BootULCI						
CQ_SR	.1620	.0679	.0445	.3113					

Table (47) Results of CQ as a Mediator Effect of LMS on EIO

7.7.2.3.3. The Board of Innovation Provision (BIP_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the BIP and a causal antecedent of the EIO.

To test the mediation effect on this model, the first step will be running the linear regression and reporting the result of BIP_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of BIP_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the BIP_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- **BIP_{SR}** predicting **EIO_{SR}**. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the BIP_{SR} significantly predicted EIO_{SR}. For BIP_{SR}, the results showed that the Lower Confidence Interval LLCI=0.4505 and the Upper Confidence Interval ULCI=0.1.0373; which means zero does not lie between them and the effect is significant. The coefficient of R=0.3681 suggests a positive relationship between BIP_{SR} and EIO_{SR}. Also, the R²=0.1355, which indicates an acceptable level of goodness in this model was 14% of the variance of EIO_{SR} could be explained by BIP_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F(1,160)= 25.0715 at significant value p< 0.01. Finally, for BIP_{SR} b= 0.7439 and t (1,160) =5.0071 with Beta value =0.3681 at significant value p< 0.01, which means a higher level of Board of Innovation Provision might increase the Emergence of innovation outcomes in the public sector higher education service providers.

***** PROCESS Procedure for SPSS Version 3.3 *****									
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Documentation available in Hayes (2018). www.guilford.com/p/hayes3									

Model	:	4							
Y	:	EIO_SR							
X	:	BIP_SR							
M	:	CQ_SR							
Sample									
Size:		162							
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.3681	.1355	2.4039	25.0715	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p		LLCI		ULCI	
constant	1.9160	.5036	3.8044	.0002		.9214		2.9106	
BIP_SR	.7439	.1486	5.0071	.0000		.4505		1.0373	

Table (48) BIP_{SR} predicting EIO_{SR}. (Path c)

2- BIP_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test if BIP_{SR} significantly predicted CQ_{SR}. The result indicated that the coefficient of $R=0.3189$ suggests a positive relationship between BIP_{SR} and CQ_{SR}, which means that CQ_{SR} is related to BIP_{SR}. Also, the $R^2=0.1017$, which indicates an acceptable level of goodness in this model, were 10% of the variance of CQ_{SR}, could be explained by BIP_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} because of $F(1,160)=18.1181$ at significant value $p<0.01$. Finally, $b=0.3487$ and $t(1,160)=4.2565$ with Beta positive value $=0.3189$ indicates that higher of BIP_{SR} might increase the CQ_{SR}.

***** PROCESS Procedure for SPSS Version 3.3 *****									
Written by Andrew F. Hayes, Ph.D.								www.afhayes.com	
Documentation available in Hayes (2018).								www.guilford.com/p/hayes3	

Model	:	4							
Y	:	EIO_SR							
X	:	BIP_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.3189	.1017	.7309	18.1181	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.7970	.2777	6.4710	.0000	1.2485	2.3454			
BIP_SR	.3487	.0819	4.2565	.0000	.1869	.5105			

Table (49) BIP_{SR} predicting CQ_{SR}. (Path a)

3- BIP_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the BIP_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For BIP_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.1964$ and the Upper Confidence Interval $ULCI=0.7600$; which means zero does not lie between them and the effect is significant. For CQ_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.5043$ and the Upper Confidence Interval $ULCI=1.0198$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.5368$ suggests a positive relationship between BIP_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.2881$ which indicates an acceptable level of goodness in this model were 29% of the variance of EIO_{SR} could be explained by BIP_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F(2,159)=32.1774$ at significant value $p<0.01$. Finally, for BIP_{SR} $b=0.4782$ and $t(2,159)=3.3511$ with Beta value $=0.2366$, and for CQ_{SR} $b=0.7621$ and $t(2,159)=5.8393$ with Beta value $=0.4122$ with significant value $p<0.01$ (path b where M predicting Y). Also, the all effects of BIP_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 0.5465 + 0.4782 \text{ BIP}_{\text{SR}} + 0.7621 \text{ CQ}_{\text{SR}}$$

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Written by Andrew F. Hayes, Ph.D.						www.afhayes.com					
Documentation available in Hayes (2018).						www.guilford.com/p/hayes3					

Model	:	4									
Y	:	EIO_SR									
X	:	BIP_SR									
M	:	CQ_SR									
Sample											
Size:	162										

OUTCOME VARIABLE:											
EIO_SR											
Model Summary											
R		R-sq		MSE		F		df1	df2	p	
.5368		.2881		1.9919		32.1774		2.0000	159.0000	.0000	
Model											
coeff		se		t		p		LLCI		ULCI	
constant		.5465		.5149		1.0613		.2901		-.4705	1.5635
BIP_SR		.4782		.1427		3.3511		.0010		.1964	.7600
CQ_SR		.7621		.1305		5.8393		.0000		.5043	1.0198

Table (50) BIP_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ_{SR}, as a mediator is a better contributor to the impact of BIP_{SR} on EIO_{SR} rather than being a moderator. The total effect of BIP_{SR} on EIO_{SR} = 0.7439 has increased from the direct effect of BIP_{SR} on EIO_{SR} = 0.4728 by the influence of the indirect effect BIP_{SR} on EIO_{SR} = 0.2657 caused by CQ_{SR} as a mediator. The increase of this higher impact of BIP_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the BIP_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of the

Cultural Intelligence on Board of Innovation Provision will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. So path (a,b) is the better way to increase EIO_{SR} in the public sector through mediating the Board of Innovation Provision with Cultural Intelligence interaction and training.

Total effect of X on Y									
Effect	se	t	p	LLCI	ULCI	c _{ps}	c _{cs}		
.7439	.1486	5.0071	.0000	.4505	1.0373	.4475	.3681		
Direct effect of X on Y									
Effect	se	t	p	LLCI	ULCI	c' _{ps}	c' _{cs}		
.4782	.1427	3.3511	.0010	.1964	.7600	.2877	.2366		
Indirect effect(s) of X on Y:									
Effect	BootSE	BootLLCI	BootULCI						
CQ_SR	.2657	.0848	.1096	.4390					

Table (51) Results of CQ as a Mediator Effect of BIP on EIO

7.7.2.3.4. The Innovation Human Drivers (IHD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the IHD and a causal antecedent of the EIO.

To test the mediation effect on this model, the first step will be running the linear regression and reporting the result of IHD_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of IHD_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the IHD_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- **IHD_{SR}** predicting **EIO_{SR}**. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the IHD_{SR} significantly predicted EIO_{SR}. For IHD_{SR} the results showed that the Lower Confidence Interval LLCI=0.3937 and the Upper Confidence Interval ULCI=0.7352; which means zero does not lie between them and the effect is significant. The coefficient of R=0.4586 suggests a positive relationship between IHD_{SR} and EIO_{SR}. Also, the R²=0.2103, which indicates an acceptable level of goodness in this model was 21% of the variance of EIO_{SR} could be explained by IHD_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 42.6114 at significant value p< 0.01. Finally, for IHD_{SR} b=0.5644 and t=6.5277 with Beta value =0.4586 at significant value p< 0.01, which means a higher level of Innovation Human Drivers might increase the Emergence of innovation outcomes in the public sector higher education service providers.

***** PROCESS Procedure for SPSS Version 3.3 *****									
Written by Andrew F. Hayes, Ph.D.								www.afhayes.com	
Documentation available in Hayes (2018).								www.guilford.com/p/hayes3	

Model	:	4							
Y	:	EIO_SR							
X	:	IHD_SR							
M	:	CQ_SR							
Sample									
Size:	162								
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.4586	.2103	2.1958	42.6114	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.2662	.4885	2.5922	.0104	.3015	2.2308			
IHD SR	.5644	.0865	6.5277	.0000	.3937	.7352			

Table (52) IHD_{SR} predicting EIO_{SR}. (Path c)

2- IHD_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test is that the IHD_{SR} significantly predicted CQ_{SR}. For IHD_{SR}, the results showed that the Lower Confidence Interval LLCI=0.0942 and the Upper Confidence Interval ULCI=0.2931; which means zero does not lie between them and the effect is significant. Also, $R=0.2909$ suggests a positive relationship between IHD_{SR} and CQ_{SR}, which means that CQ_{SR} is related to IHD_{SR}. Also, the $R^2=0.0846$, which indicates an acceptable level of goodness in this model, were 8% of the variance of CQ_{SR}, could be explained by IHD_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} because of $F=14.7902$ at significant value $p<0.01$. Finally, $t=3.8458$ with Beta positive value $=0.198$ indicates that higher of IHD_{SR} might increase the CQ_{SR}.

***** PROCESS Procedure for SPSS Version 3.3 *****									
Written by Andrew F. Hayes, Ph.D.								www.afhayes.com	
Documentation available in Hayes (2018).								www.guilford.com/p/hayes3	

Model	: 4								
Y	: EIO_SR								
X	: IHD_SR								
M	: CQ_SR								
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.2909	.0846	.7448	14.7902	1.0000	160.0000			.0002
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.8814	.2845	6.6135	.0000	1.3196	2.4432			
IHD SR	.1937	.0504	3.8458	.0002	.0942	.2931			

Table (53) IHD_{SR} predicting CQ_{SR}. (Path a)

3- **IHD_{SR}** and **EIO_{SR}** with **CQ_{SR}** (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the IHD_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For IHD_{SR}, the results showed that the Lower Confidence Interval LLCI=0.2631 and the Upper Confidence Interval ULCI=0.5886; which means zero does not lie between them and the effect is significant. For CQ_{SR}, the results showed that the Lower Confidence Interval LLCI=0.4710 and the Upper Confidence Interval ULCI=0.9600; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.5894$ suggests a positive relationship between IHD_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3474$ which indicates an acceptable level of goodness in this model were 35% of the variance of EIO_{SR} could be explained by IHD_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F=42.3282$ at significant value $p<0.01$. Finally, for IHD_{SR} $b=0.4259$ and $t=5.1675$ with Beta value $=0.3460$, and for CQ_{SR} $b=0.7155$ and $t=5.7804$ with Beta value $=0.3870$ with significant value $p<0.01$ (path b where M predicting Y). Also, the all effects of IHD_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = -0.0800 + 0.4259 \text{IHD}_{\text{SR}} + 0.7155 \text{CQ}_{\text{SR}}$$

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Documentation available in Hayes (2018).						www.guilford.com/p/hayes3			

Model	:	4							
Y	:	EIO_SR							
X	:	IHD_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.5894	.3474	1.8259	42.3282	2.0000	159.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	-.0800	.5026	-.1591	.8738	-1.0726	.9127			
IHD_SR	.4259	.0824	5.1675	.0000	.2631	.5886			
CQ_SR	.7155	.1238	5.7804	.0000	.4710	.9600			

Table (54) IHD_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ, as a mediator, is a better contributor to the impact of IHD_{SR} on EIO_{SR} rather than being a moderator. The total effect of IHD_{SR} on EIO_{SR} = 0.5644 has increased from the direct effect of IHD_{SR} on EIO_{SR} = 0.4259 by the influence of the indirect effect IHD_{SR} on EIO_{SR} = 0.1386 caused by CQ_{SR} as a mediator. The increase of this higher impact of IHD_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the IHD_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of

the Cultural Intelligence on Innovation Human Drivers will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. So path (a,b) is the better way to increase EIO_{SR} in the public sector through mediating the Innovation Human Driver with Cultural Intelligence interaction and training.

Total effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.5644	.0865	6.5277	.0000	.3937	.7352	.3395	.4586
Direct effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.4259	.0824	5.1675	.0000	.2631	.5886	.2562	.3460
Indirect effect(s) of X on Y:							
Effect	BootSE	BootLLCI	BootULCI				
CQ_SR	.1386	.0513	.0496	.2503			

Table (55) Results of CQ as a Mediator Effect of IDH on EIO

7.7.2.3.5. The Organisation Behaviour (OB_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the OB and a causal antecedent of the EIO.

To test the mediation effect on this model; the first step will be running the linear regression and reporting the result of OB_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of OB_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the OB_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- **OB_{SR}** predicting **EIO_{SR}**. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the OB_{SR} significantly predicted EIO_{SR}. For OB_{SR}, the results showed that the Lower Confidence Interval LLCI=0.4973 and the Upper Confidence Interval ULCI=0.8755; which means zero does not lie between them and the effect is significant. The coefficient of R=0.4931 suggests a positive relationship between OB_{SR} and EIO_{SR}. Also, the R²=0.2431, which indicates an acceptable level of goodness in this model was 24% of the variance of EIO_{SR} could be explained by OB_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 51.3933 at significant value p< 0.01. Finally, for OB_{SR} t=7.1689 and b=0.6864 with Beta value =0.4931 at significant value p< 0.01, which means a higher level of Organisation Behaviour might increase the Emergence of innovation outcomes in the public sector higher education service providers.

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Documentation available in Hayes (2018). www.guilford.com/p/hayes3									

Model	:	4							
Y	:	EIO_SR							
X	:	OB_SR							
M	:	CQ_SR							
Sample									
Size:		162							
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.4931	.2431	2.1046	51.3933	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.7415	.3830	4.5468	.0000	.9851	2.4978			
OB_SR	.6864	.0958	7.1689	.0000	.4973	.8755			

Table (56) OB_{SR} predicting EIO_{SR}. (Path c)

2- OB_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test if OB_{SR} significantly predicted CQ_{SR}. The results showed that the Lower Confidence Interval LLCI=0.0644 and the Upper Confidence Interval ULCI=0.2929; which means zero does not lie between them and the effect is significant. The coefficient of R=0.2372 suggests a positive relationship between OB_{SR} and CQ_{SR}, which suggests that CQ is related to OB. Also, the R²= 0.0563, which indicates an acceptable level of goodness in this model, were 6% of the variance of CQ_{SR}, could be explained by OB_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 9.5408 at significant value p< 0.01. Finally, b=0.1786 and t=3.0888 with Beta positive value =0.2372 indicate that higher of OB_{SR} might increase the CQ_{SR}.

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Written by Andrew F. Hayes, Ph.D.					www.afhayes.com				
Documentation available in Hayes (2018).					www.guilford.com/p/hayes3				

Model	:	4							
Y	:	EIO_SR							
X	:	OB_SR							
M	:	CQ_SR							
Sample									
Size:		162							

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.2372	.0563	.7679	9.5408	1.0000	160.0000			.0024
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	2.2617	.2313	9.7761	.0000	1.8048	2.7185			
OB_SR	.1786	.0578	3.0888	.0024	.0644	.2929			

Table (57) OB_{SR} predicting CQ_{SR}. (Path a)

3- OB_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the OB_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For OB_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.3812$ and the Upper Confidence Interval $ULCI=0.7322$; which means zero does not lie between them and the effect is significant. For CQ_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.4932$ and the Upper Confidence Interval $ULCI=0.9592$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.6235$ suggests a positive relationship between OB_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3888$ which indicates an acceptable level of goodness in this model was 39% of the variance of EIO_{SR} could be explained by OB_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F= 50.5624$ at significant value $p< 0.01$. Finally, for OB_{SR} $t=6.2653$ and $b=0.5567$ with Beta positive value $=0.3999$, and for CQ_{SR} $t=6.1550$ and $b=0.7262$ with Beta value $=0.3928$ with significant value $p< 0.01$ (path b where M predicting Y). Also, the all effects of OB_{SR} on EIO_{SR} caused by CQ_{SR} showed that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 0.0990 + 0.5567 \text{OB}_{\text{SR}} + 0.7262 \text{CQ}_{\text{SR}}$$

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Documentation available in Hayes (2018).						www.guilford.com/p/hayes3						

Model	:	4										
Y	:	EIO_SR										
X	:	OB_SR										
M	:	CQ_SR										
Sample												
Size:	162											

OUTCOME VARIABLE:												
EIO_SR												
Model Summary												
R		R-sq		MSE		F		df1		df2	p	
.6235		.3888		1.7103		50.5624		2.0000		159.0000	.0000	
Model												
coeff		se		t		p		LLCI		ULCI		
constant		.0990		.4364		.2269		.8208		-.7628		.9608
OB_SR		.5567		.0889		6.2653		.0000		.3812		.7322
CQ_SR		.7262		.1180		6.1550		.0000		.4932		.9592

Table (58) OB_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks :**

CQ_{SR} has a dual effect as a moderator and mediator on OB_{SR} predicting EIO_{SR} as these three variables are related and distinct. Such an effect might occur when we use a variable that is correlated and has a significant causal result on both the independent and dependent variables (Beauchaine, Webster-Stratton, and Reid, 2005). These effects are explained as follows:

- c. CQ_{SR} as a moderator: is contextualising the influence of Organisation Behaviour on the Emergence of Innovation in a weakening perspective as an outer effect on the direct relation between OB_{SR} and EIO_{SR}. This result means that when CQ_{SR} is not considered as part of the organisational behaviour, it has a weakening effect on the Emergence of Innovation Outcomes in the public sector higher education service providers.
- d. CQ_{SR} as a mediator: is a better contributor to the impact of OB_{SR} on EIO_{SR} rather than being a moderator. The total effect of OB_{SR} on EIO_{SR} = 0.6864 has increased from the direct effect of OB_{SR} on EIO_{SR} = 0.5567 by the influence of the indirect effect of OB_{SR} on EIO_{SR} = 0.1297 caused by CQ_{SR} as a mediator. The increase of this higher impact of OB_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the OB_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of Cultural Intelligence on Organisational Behaviour will lead to an increase in the Emergence of Innovation Outcomes in the public sector. So path (a,b) is the better way to increase EIO_{SR} in the public sector higher education service providers through mediating the Organisation Behaviour with Cultural Intelligence interaction.

Total effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c_ps	c_cs	
.6864	.0958	7.1689	.0000	.4973	.8755	.4129	.4931	
Direct effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs	
.5567	.0889	6.2653	.0000	.3812	.7322	.3349	.3999	
Indirect effect(s) of X on Y:								
Effect	BootSE	BootLLCI	BootULCI					
CQ_SR	.1297	.0584	.0343	.2641				

Table (59) Results of CQ as a Mediator Effect of OB on EIO

7.7.2.3.6. Environment Readiness (ER_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the ER and a causal antecedent of the EIO.

To test the mediation effect on this model, the first step will be running the linear regression and reporting the result of ER_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of ER_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the ER_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- ER_{SR} predicting EIO_{SR}. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the ER_{SR} significantly predicted EIO_{SR}. For ER_{SR}, the results showed that the Lower Confidence Interval LLCI=0.6964 and the Upper Confidence Interval ULCI=1.2769; which means zero does not lie between them and the effect is significant. The coefficient of R=0.4688 suggests a positive relationship between ER_{SR} and EIO_{SR}. Also, the

$R^2=0.2197$, which indicates an acceptable level of goodness in this model, as 22% of the variance of EIO_{SR} could be explained by ER_{SR} . Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F=45.0615$ at significant value $p< 0.01$. Finally, for ER_{SR} $t=6.7128$ and $b=0.9866$ with Beta value $=0.4688$ at significant value $p< 0.01$, which means a higher level of Environment Readiness might increase the Emergence of innovation outcomes in the public sector higher education service providers.

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Documentation available in Hayes (2018).						www.guilford.com/p/hayes3			

Model	:	4							
Y	:	EIO_SR							
X	:	ER_SR							
M	:	CQ_SR							
Sample									
Size:	162								
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2			p
	.4688	.2197	2.1696	45.0615	1.0000	160.0000			.0000
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.3816	.4589	3.0105	.0030	.4753	2.2880			
ER_SR	.9866	.1470	6.7128	.0000	.6964	1.2769			

Table (60) ER_{SR} predicting EIO_{SR} . (Path c)

2- ER_{SR} predicting CQ_{SR} . (Path a)

Linear regression analysis was used to test if the ER_{SR} significantly predicted CQ_{SR} . The results showed that the Lower Confidence Interval $LLCI=0.1975$ and the Upper Confidence Interval $ULCI=0.5341$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.3213$ suggests a positive relationship between ER_{SR} and CQ_{SR} , which means that CQ_{SR} is related to ER . Also, the $R^2=0.1032$, which indicates an acceptable level of goodness in this model, were 10% of the variance of CQ_{SR} , could be explained by ER_{SR} . Furthermore, this model is predicting the dependent variable EIO_{SR} because of $F=18.4178$ at significant value $p<0.01$. Finally, $t=4.2912$ and $b=0.3658$ with Beta positive value $=0.3213$ indicate that higher of ER_{SR} might increase the CQ_{SR} .

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Written by Andrew F. Hayes, Ph.D.						www.afhayes.com			
Documentation available in Hayes (2018).						www.guilford.com/p/hayes3			

Model	: 4								
Y	: EIO_SR								
X	: ER_SR								
M	: CQ_SR								
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.3213	.1032	.7297	18.4178	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.8386	.2661	6.9082	.0000	1.3130	2.3642			
ER_SR	.3658	.0852	4.2916	.0000	.1975	.5341			

Table (61) ER_{SR} predicting CQ_{SR} . (Path a)

3- ER_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the ER_{SR} is significantly predicted EIO_{SR} using CQ_{SR} as mediator. For ER_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.4510$ and the Upper Confidence Interval $ULCI=1.0138$; which means zero does not lie between them and the effect is significant. For CQ_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.0.4477$ and the Upper Confidence Interval $ULCI=0.9421$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.5886$ suggests a positive relationship between ER_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3465$ which indicates an acceptable level of goodness in this model were 35% of the variance of EIO_{SR} could be explained by ER_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F=42.1440$ at significant value $p<0.01$. Finally, for ER_{SR} $t=5.1402$ and $b=0.7324$ with Beta value $=0.3480$, and for CQ_{SR} $t=5.5521$ and $b=0.949$ with Beta value $=0.3759$ with significant value $p<0.01$ (path b where M predicting Y). Also, the all effects of ER_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = 0.1040 + 0.7324 \text{ER}_{\text{SR}} + 0.6949 \text{CQ}_{\text{SR}}$$

***** PROCESS Procedure for SPSS Version 3.3 *****													
Written by Andrew F. Hayes, Ph.D.					www.afhayes.com								
Documentation available in Hayes (2018).					www.guilford.com/p/hayes3								

Model	:	4											
Y	:	EIO_SR											
X	:	ER_SR											
M	:	CQ_SR											
Sample													
Size:	162												

OUTCOME VARIABLE:													
EIO_SR													
Model Summary													
R		R-sq		MSE		F		df1		df2		p	
.5886		.3465		1.8287		42.1440		2.0000		159.0000		.0000	
Model													
coeff		se		t		p		LLCI		ULCI			
constant		.1040		.4801		.2167		.8287		-.8441		1.0522	
ER_SR		.7324		.1425		5.1402		.0000		.4510		1.0138	
CQ_SR		.6949		.1252		5.5521		.0000		.4477		.9421	

Table (62) ER_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ_{SR}, as a mediator is a better contributor to the impact of ER_{SR} on EIO_{SR} rather than being a moderator. The total effect of ER_{SR} on EIO_{SR} = 0.9866 has increased from the direct effect of ER_{SR} on EIO_{SR} = 0.7324 by the influence of the indirect effect of ER_{SR} on EIO_{SR} = 0.2542 caused by CQ_{SR} as a mediator. The increase of this higher impact of ER_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the ER_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of

the Cultural Intelligence on Environment Readiness will lead to an increase in the Emergence of Innovation Outcomes in the public sector. Also, the significant increase caused by CQ as a mediator indicated that the environment was this survey was conducted in a multicultural and diversified environment that support the purpose of this research. So path (a,b) is the better way to increase EIO_{SR} in the public sector higher education service providers through mediating the Environment Readiness with Cultural Intelligence interaction.

Total effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c' ps	c' cs
.9866	.1470	6.7128	.0000	.6964	1.2769	.5935	.4688
Direct effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c' ps	c' cs
.7324	.1425	5.1402	.0000	.4510	1.0138	.4406	.3480
Indirect effect(s) of X on Y:							
Effect	BootSE	BootLLCI	BootULCI				
CQ_SR	.2542	.0886	.1023	.4430			

Table (63) Results of CQ as a Mediator Effect of ER on EIO

7.7.2.3.7. The Innovation System Drivers (ISD_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}), where CQ is the causal result of the ISD and a causal antecedent of the EIO.

To test the mediation effect on this model, the first step will be running the linear regression and reporting the result of ISD_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of ISD_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the ISD_{SR} and then in the second level will be the CQ_{SR} to study the prediction model.

1- ISD_{SR} predicting EIO_{SR}. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the ISD_{SR} significantly predicted EIO_{SR}. For ISD_{SR}, the results showed that the Lower Confidence Interval LLCI=0.4791 and the Upper Confidence Interval ULCI=0.8062; which means zero does not lie between them and the effect is significant. The coefficient of R=0.5229 suggests a positive relationship between ISD_{SR} and EIO_{SR}. Also, the R²=0.2734, which indicates an acceptable level of goodness in this model was 27% of the variance of EIO_{SR} could be explained by ISD_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of F= 60.2103 at significant value p< 0.01. Finally, for ISD_{SR} t=7.7595 and b=0.6426 with Beta value =0.5229 at significant value p< 0.01, which means a higher level of Innovation System Drivers might increase the Emergence of Innovation Outcomes in the public sector higher education service providers.

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Documentation available in Hayes (2018). www.guilford.com/p/hayes3									

Model	:	4							
Y	:	EIO_SR							
X	:	ISD_SR							
M	:	CQ_SR							
Sample									
Size:		162							
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
R		R-sq	MSE	F	df1	df2	p		
.5229		.2734	2.0203	60.2103	1.0000	160.0000	.0000		
Model									
coeff		se	t	p	LLCI		ULCI		
constant		1.2854	.4120	3.1198	.0021	.4717	2.0991		
ISD_SR		.6426	.0828	7.7595	.0000	.4791	.8062		

Table (64) ISD_{SR} predicting EIO_{SR}. (Path c)

2- ISD_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test if ISD_{SR} significantly predicted CQ_{SR}. The results showed that the Lower Confidence Interval LLCI=0.0880 and the Upper Confidence Interval ULCI=0.2872; which means zero does not lie between them and the effect is significant. The coefficient of R=0.2822 suggests a weak positive relationship between ISD_{SR} and CQ_{SR}, which means that CQ is related to ISD. Also, the $R^2 = 0.0796$, which indicates an acceptable level of goodness in this model, were 8% of the variance of CQ_{SR}, could be explained by ISD_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} because of $F = 13.8447$ at significant value $p < 0.01$. Finally, $t = 3.7208$ and $b = 0.1876$ with Beta positive value =0.2822 indicate that higher of ISD_{SR} might increase the CQ_{SR}.

***** PROCESS Procedure for SPSS Version 3.3 *****									
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Model	:	4							
Y	:	EIO_SR							
X	:	ISD_SR							
M	:	CQ_SR							
Sample									
Size:	162								

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.2822	.0796	.7489	13.8447	1.0000	160.0000		.0003	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	2.0455	.2508	8.1544	.0000	1.5501	2.5409			
ISD SR	.1876	.0504	3.7208	.0003	.0880	.2872			

Table (65) ISD_{SR} predicting CQ_{SR}. (Path a)

3- ISD_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the ISD_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For ISD_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.03589$ and the Upper Confidence Interval $ULCI=0.6700$; which means zero does not lie between them and the effect is significant. For CQ_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.4492$ and the Upper Confidence Interval $ULCI=0.9171$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.6318$ suggests a positive relationship between ISD_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3991$ which indicates an acceptable level of goodness in this model was 40% of the variance of EIO_{SR} could be explained by ISD_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F=52.8071$ at significant value $p<0.01$. Finally, for ISD_{SR} $t=6.5327$ and $b=0.5145$ with Beta value $=0.4186$, and for CQ_{SR} $t=5.7674$ and $b=0.6832$ with Beta value $=0.03696$ with significant value $p<0.01$ (path b where M predicting Y). Also, the all effects of ISD_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals includes zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = -0.1120 + 0.5145 \text{ ISD}_{\text{SR}} + 0.6832 \text{ CQ}_{\text{SR}}$$

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Documentation available in Hayes (2018).						www.guilford.com/p/hayes3							

Model	:	4											
Y	:	EIO_SR											
X	:	ISD_SR											
M	:	CQ_SR											
Sample													
Size:		162											

OUTCOME VARIABLE:													
EIO_SR													
Model Summary													
R		R-sq		MSE		F		df1		df2		p	
.6318		.3991		1.6813		52.8071		2.0000		159.0000		.0000	
Model													
coeff		se		t		p		LLCI		ULCI			
constant		-.1120		.4472		-.2505		.8025		-.9952		.7712	
ISD_SR		.5145		.0788		6.5327		.0000		.3589		.6700	
CQ_SR		.6832		.1185		5.7674		.0000		.4492		.9171	

Table (66) ISD_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ_{SR} has a dual effect as a moderator and mediator on ISD predicting EIO as these three variables are related, and distinct. Such an effect might occur when we use a variable as a moderator that is correlated and has a significant causal result on both the independent and dependent variables (Beauchaine, Webster-Stratton, and Reid, 2005). These effects are explained as follows:

- a. CQ_{SR} as a moderator: is contextualising the influence of Innovation System Drivers on the Emergence of Innovation in a weakening perspective as an outer effect on the direct relation between ISD_{SR} and EIO. This result means that when CQ_{SR} is not considered as part of the organisational system, it has a weakening effect on the Emergence of Innovation Outcomes in the public sector higher education service providers.
- b. CQ_{SR} as a mediator: is a better contributor to the impact of ISD_{SR} on EIO_{SR} rather than being a moderator. The total effect of ISD_{SR} on EIO_{SR} = 0.6426 has increased from the direct effect of ISD_{SR} on EIO_{SR} = 0.5145 by the influence of the indirect effect of ISD_{SR} on EIO_{SR} = 0.1282 caused by CQ_{SR} as a mediator. The increase of the impact of ISD_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the ISD_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of the Cultural Intelligence on Innovation System Drivers will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. Also, the significant increase caused by CQ as a mediator indicated that the environment was this survey was conducted is a multicultural and diversified environment that support the purpose of this research. So path (a,b) is the better way to increase EIO_{SR} in the public sector higher education service providers through mediating the Innovation System Drivers with Cultural Intelligence interaction.

Total effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs	
.6426	.0828	7.7595	.0000	.4791	.8062	.3866	.5229	
Direct effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs	
.5145	.0788	6.5327	.0000	.3589	.6700	.3095	.4186	
Indirect effect(s) of X on Y:								
Effect	BootSE	BootLLCI	BootULCI					
CQ_SR	.1282	.0503	.0427	.2397				

Table (67) Results of CQ as a Mediator Effect of ISD on EIO

7.7.2.3.8. The Emergence of Innovation Drivers (EID_{SR}) with the Emergence of Innovation Outcomes (EIO_{SR}). The global effect, where CQ is the causal result of the EID and a causal antecedent of the EIO.

To test the mediation effect on this model, the first step will be running the linear regression and reporting the result of EID_{SR} prediction of the dependable variable EIO_{SR}. The second step will be linear regression and reporting the result of EID_{SR} prediction of the mediator CQ_{SR}. The final step will be hierarchical regression analysis through entering the EID_{SR} and then in the second level, the CQ_{SR} to study the prediction model.

1- EID_{SR} predicting EIO_{SR}. (Path c)

Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the EID_{SR} significantly predicted EIO_{SR}. For EID_{SR}, the results showed that the Lower Confidence Interval LLCI=0.3294 and the Upper Confidence Interval ULCI=0.5606;

which means zero does not lie between them and the effect is significant. The coefficient of $R=0.5152$ suggests a positive relationship between EID_{SR} and EIO_{SR} . Also, the $R^2=0.2654$, which indicates an acceptable level of goodness in this model, as 27% of the variance of EIO_{SR} could be explained by EID_{SR} . Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F=57.8189$ at significant value $p<0.01$. Finally, for EID_{SR_REF} $t=7.6039$ and $b=0.4450$ with Beta value $=0.5152$ at significant value $p<0.01$, which means a higher level of Emergence of Innovation Drivers might increase the Emergence of innovation outcomes in the public sector higher education service providers.

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Model	:	4							
Y	:	EIO_SR							
X	:	EID_SR							
M	:	CQ_SR							
Sample									
Size:	162								
***** TOTAL EFFECT MODEL *****									
OUTCOME VARIABLE:									
EIO_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.5152	.2654	2.0425	57.8189	1.0000	160.0000		.0000	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.2905	.4194	3.0773	.0025	.4623	2.1187			
EID_SR	.4450	.0585	7.6039	.0000	.3294	.5606			

Table (68) EID_{SR} predicting EIO_{SR} . (Path c)

2- EID_{SR} predicting CQ_{SR}. (Path a)

Linear regression analysis was used to test if the EID_{SR} significantly predicted CQ_{SR}. The results showed that the Lower Confidence Interval LLCI=0.0733 and the Upper Confidence Interval ULCI=0.2122; which means zero does not lie between them and the effect is significant. The coefficient of R=0.3055 suggests a weak positive relationship between EID_{SR} and CQ_{SR}, which means that CQ_{SR} is related to EID_{SR}. Also, the $R^2 = 0.0933$, which indicates an acceptable level of goodness in this model, were 9% of the variance of CQ_{SR}, could be explained by EID_{SR}. Furthermore, this model is predicting the dependent variable EIO_{SR} because of $F = 16.4682$ at significant value $p < 0.01$. Finally, $t = 4.0581$ and $b = 0.1427$ with Beta positive value $= 0.3055$ at significant value $p < 0.01$ indicates that higher of EID_{SR} might increase the CQ_{SR}.

***** PROCESS Procedure for SPSS Version 3.3 *****									
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Documentation available in Hayes (2018). www.guilford.com/p/hayes3									

Model	:	4							
Y	:	EIO_SR							
X	:	EID_SR							
M	:	CQ_SR							
Sample									
Size:		162							

OUTCOME VARIABLE:									
CQ_SR									
Model Summary									
	R	R-sq	MSE	F	df1	df2		p	
	.3055	.0933	.7377	16.4682	1.0000	160.0000		.0001	
Model									
	coeff	se	t	p	LLCI	ULCI			
constant	1.9585	.2520	7.7709	.0000	1.4607	2.4562			
EID_SR	.1427	.0352	4.0581	.0001	.0733	.2122			

Table (69) EID_{SR} predicting CQ_{SR}. (Path a)

3- EID_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

Hierarchical Regression analysis via (Process v3 by Andrew F. Hayes – model 4) was used to test if the EID_{SR} are significantly predicted EIO_{SR} using CQ_{SR} as mediator. For EID_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.2375$ and the Upper Confidence Interval $ULCI=0.4603$; which means zero does not lie between them and the effect is significant. For CQ_{SR} , the results showed that the Lower Confidence Interval $LLCI=0.4352$ and the Upper Confidence Interval $ULCI=0.9118$; which means zero does not lie between them and the effect is significant. The coefficient of $R=0.6211$ suggests a positive relationship between EID_{SR} and EIO_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Also, the $R^2=0.3858$ which indicates an acceptable level of goodness in this model was 39% of the variance of EIO_{SR} could be explained by EID_{SR} mediated by CQ_{SR} with a significant increase from the previous case without CQ_{SR} as a mediator. Furthermore, this model is predicting the dependent variable EIO_{SR} well because of $F= 49.9322$ at significant value $p< 0.01$. Finally, for EID_{SR} $t=6.4882$ and $b=0.3489$ with Beta value $=0.4039$, and for CQ_{SR} $t=5.5812$ and $b=0.6735$ with Beta value $= 0.3643$ with significant value $p< 0.01$ (path b where M predicting Y). Also, the all effects of EID_{SR} on EIO_{SR} caused by CQ_{SR} show that none of Boot Lower Confidence Intervals and the Boot Upper Confidence Intervals does not include zero for all cases where CQ_{SR} was used as a mediator as shown in the table below. This result means that the interaction effect is significant and lead to the fact that Cultural Intelligence is a mediator for this model. Below is the prediction equation:

$$\text{EIO}_{\text{SR}} = -0.0285 + 0.3489 \text{EID}_{\text{SR}} + 0.6735 \text{CQ}_{\text{SR}}$$

***** PROCESS Procedure for SPSS Version 3.3 *****												
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Documentation available in Hayes (2018).						www.guilford.com/p/hayes3						

Model	:	4										
Y	:	EIO_SR										
X	:	EID_SR										
M	:	CQ_SR										
Sample												
Size:	162											

OUTCOME VARIABLE:												
EIO_SR												
Model Summary												
R		R-sq		MSE		F		df1		df2	p	
.6211		.3858		1.7187		49.9322		2.0000		159.0000	.0000	
Model												
coeff		se		t		p		LLCI		ULCI		
constant		-.0285		.4515		-.0631		.9498		-.9201		.8632
EID_SR		.3489		.0564		6.1882		.0000		.2375		.4603
CQ_SR		.6735		.1207		5.5812		.0000		.4352		.9118

Table (70) EID_{SR} and EIO_{SR} with CQ_{SR} (Path a,b)

- Remarks:**

CQ_{SR} has a dual effect as a moderator and mediator on EID_{SR} predicting EIO_{SR} as these three variables are related and distinct. Such an effect might occur when we use a variable that is correlated and has a significant causal result on the independent and causal antecedent result on dependent variables (Beauchaine, Webster-Stratton, and Reid, 2005). This effect is explained as follows:

- a. CQ_{SR} as a moderator: is contextualising the influence of Emergence of Innovation Drivers on the Emergence of Innovation in a weakening perspective as an outer effect on the direct relation between EID_{SR} and EIO_{SR}. This result means that when CQ_{SR} is not considered as part of the Emergence of Innovation Drivers in this case, and so, it has a weakening effect on the Emergence of Innovation Outcomes in the public sector higher education service providers as an external factor.
- b. CQ as a mediator: is a better contributor to the impact of EID_{SR} on EIO_{SR} rather than being a moderator. The total effect of EID_{SR} on EIO_{SR} = 0.4450 has increased from the direct effect of EID_{SR} on EIO_{SR} = 0.3489 by the influence of the indirect effect of EID_{SR} on EIO_{SR} = 0.0961 caused by CQ_{SR} as a mediator. The increase of the impact of EID_{SR} on EIO_{SR} is caused by the fact that CQ_{SR} was the causal result of the EID_{SR}, and at the same time, CQ_{SR} is a causal antecedent of the EIO_{SR} based on the positive correlations conclusions. This result means that the mediation of the Cultural Intelligence on Emergence of Innovation Drivers will lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. So path (a,b) is the better way to increase EIO in the public sector through adopting the mediation the Emergence of Innovation Drivers with Cultural Intelligence interaction and adoption at the macro-level (individuals, group, organisations, and community).

Total effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c_ps	c_cs	
.4450	.0585	7.6039	.0000	.3294	.5606	.2677	.5152	
Direct effect of X on Y								
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs	
.3489	.0564	6.1882	.0000	.2375	.4603	.2099	.4039	
Indirect effect(s) of X on Y:								
Effect	BootSE	BootLLCI	BootULCI					
CQ_SR	.0961	.0359	.0348	.1768				

Table (71) Results of CQ as a Mediator Effect of EID on EIO

7.7.2.3.9. Conclusion

In testing the CQ mediator effect on the relationships between independent and dependent variables, there were significant positive effects in all the cases. In open businesses with multicultural employees and customers, embedding CQ as a causal effect at the micro-level of Employee Empowerment, Line Manager Support, Board of Innovation Provision, Organisational Behaviour, and Environment Readiness will lead to increase the emergence of innovation outcomes in the public sector higher education service providers as CQ is a causal antecedent of these outcomes. Also, CQ has the same positive causal effect on the Emergence of Innovation Drivers and positive causal antecedent on the Emergence of innovation outcomes at the macro level. Such conclusion shows the need of having the CQ as a norm of the organisations in the public sector higher education service providers in order to create a balance between the internal and external environment towards innovation generation and adoption. These results suggest embedding the effect of CQ as a mediator at the individual, group, organisational, and community micro and macro levels. Below is the summary of the mediator effect.

No	Independent Variable	Dependent Variable	CQ Mediator	Prediction Equation
1	EE _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = 0.1563 + 0.5173 EE_{SR} + 0.7975 CQ_{SR}$
2	LMS _{RS}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = 0.5232 + 0.5427 LMS_{SR} + 0.7616 CQ_{SR}$
3	BIP _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = 0.5465 + 0.4782 BIP_{SR} + 0.7621 CQ_{SR}$
4	IHD _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = -0.0800 + 0.4259 IHD_{SR} + 0.7155 CQ_{SR}$
5	OB _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = 0.0990 + 0.5567 OB_{SR} + 0.7262 CQ_{SR}$
6	ER _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = 0.1040 + 0.7324 ER_{SR} + 0.6949 CQ_{SR}$
7	ISD _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = -0.1120 + 0.5145 ISD_{SR} + 0.6832 CQ_{SR}$
8	EID _{SR}	EIO _{RS}	Yes Positive effect	$EIO_{SR} = -0.0285 + 0.3489 EID_{SR} + 0.6735 CQ_{SR}$

Table (72) Summary of CQ as a Mediator Effect on the Variables

The summary of the tests took place on the research conceptual framework is illustrated in the below Table (73):

No	Independent Variable X	Dependent Variable Y	Correlation X and Y	Regression			
				Direct X on Y	CQ as Moderator on X to Y	CQ as Mediator on X to Y	
1	EE _{SR}	EIO _{RS}	Yes Positive	Yes Positive Effect	Yes Negative Effect	Yes Positive Effect	H1
2	LMS _{RS}	EIO _{RS}	Yes Positive	Yes Positive Effect	No significant Effect	Yes Positive Effect	

3	BIP_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	No significant Effect	Yes Positive Effect	
4	IHD_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	No significant Effect	Yes Positive Effect	
5	OB_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	Yes Negative effect	Yes Positive Effect	H2
6	ER_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	No significant Effect	Yes Positive Effect	
7	ISD_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	Yes Negative Effect	Yes Positive Effect	
8	EID_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	Yes Negative Effect	Yes Positive Effect	H3
9	CQ_{SR}	EIO_{RS}	Yes Positive	Yes Positive Effect	H4		

Table (73) Correlation and Regression testing Summary

7.8. Summary of Data Analysis

This chapter has been structured to discuss the analysis for the collated data using the research developed instrument. Descriptive Statistics followed by Frequencies Analysis were presented and interpreted to provide an overview of the sample and insights of the participant responses. Also,

several tests starting from Common Method Variance, Reliability, and Normality took place to test the collated responses and prepare them for further testing. Correlation and Regression test took place to validate the research hypotheses towards the generalisation of the founded results from the population selected sample. Associations between the variables were founded and tested; the research hypotheses were validated and accepted accordingly.

8. CHAPTER EIGHT: DISCUSSION

8.1. Introduction

This chapter is designed to provide a holistic discussion of the research questions, data analysis, and the findings of this research. There are four main sections in this chapter; the first one provides an overview of this research objective and the proposed Innovation Ecosystem for Public Sector Higher Education Service Providers. The second section discusses the descriptive statistics for the factor for the research independent and dependent variables. The third section discusses the findings of the correlation tests that took place to validate the research hypotheses and compare the results with the literature review. The fourth section discusses the findings of the regression tests and compares the results with the literature review, followed by discussion and conclusion.

8.2. Research Overview – Innovation Ecosystem for the Public Sector

The objective of this research has been to investigate the influence of employee empowerment and cultural intelligence on the emergence of innovation in the public sector. Based on the literature review, there was an observed gap in the body of knowledge related to innovation generation and adoption in the public sector that requires further investigation in theoretical, cultural, and governance perspective (De Vries et al. 2016). Also, a similar gap was observed in employing CQ influence on individuals and organisations (Ott and Michailova 2016) and (Solomon and Steyn 2017). These gaps are considered as an opportunity in this research to extend the body of knowledge in these promising and evolving areas through bringing the employee

empowerment and CQ in Public Sector Higher Education Service Providers context and examine their interactions and influences on the emergence of innovation.

This research supports the fact that many internal and external factors are stimulating or inhibiting innovation generation and adoption depending on purposes, resources, environments and outcomes. In the public sector context, innovation has unique conditions starting from the definition, purpose, development, implementation, and measurement that require more time, efforts, and investments to make the concept of innovation mature as required within this sector. Also, there is a need for transforming (reinventing) public sector service providers to become more responsive to the alterations caused by the rapid globalisation and transformations (Chandan 2015) and the impact of the fourth industrial revolution (Schäfer 2018). Furthermore, there is a need to have a new breed of managers (Kanter 1995) and (Ng et al. 2012) and empowered innovation champions (Kelley and Lee 2010) who possess high CQ to function in a cross-cultural working environment (Earley and Ang 2003) and support their organisations to become more innovative (Townsend 2013). Finally, there should be better-developed paradigms to enable the public sector to become more innovative, and at the same time the right environment for the emergence of innovation, which is considered as the primary driver of this research that is to ground theory for such innovation paradigm to foster innovation in the public sector.

In the same context, many internal and external factors influence innovation generation and implementation in the public sector. These Innovation influencers are and not limited to: motivation (Zhou 2006), legislation and policies (Johns et al. 2006), (Barry 2012) and (Bugge 2013), needs and purpose (Cummings 2015), employee empowerment (De Vries et al. 2016), rigid systems

(Pollitt and Bouckaert 2011), a culture of resisting changes forced by innovation (Borins 2001), social and community challenges in addition to multicultural working environments (Carter and Belanger 2005), and (Townsend 2013), rapid technology transformations (Bekkers and Homburg 2005), and globalised economies (Chandan 2015) are somehow either making the public sector service providers demoted or encouraged to accept innovation generation and adoption.

Innovation in the private sector is a well-established field of study with an explanation of innovation occurrence and adoption in organisations (Fagerberg et al. 2005) in addition to the evolvement of related theories, and research growing practices and opportunities in this field (Perks and Roberts 2013). This type of successful innovation generation and adoption in the private sector will ground the floor for this research to carefully bringing it into the public sector context and needs. This process will be taken as a lesson learned from the innovation in the private sector to enhance innovation generation and adoption within public sector higher education providers, taking into consideration public sector reserved features, nature, and needs.

Public sector service providers, including higher education, who are following the New Public Management (NPM) are sharing similar fundamental settings. First, they are funded by the government and have firmly structured institutionalised field (Ferlie, Musselin and Andresani 2008). Also, all public service providers are driven by the government and follow its countervailing power to meet broad public goals, which made higher education similar to any service provider funded by the government (Van der Meulen 1998). Furthermore, NPM model fundamentally reframed the public sector higher education service providers to be managed as a knowledge corporation following similar policies, strategies, assessments, and performance measures like the

other public service providers (Peters 2013). Moreover, public sector service providers are sharing management style that is adopting similar innovation inputs, processes, and outcomes (Arundel, Bloch and Ferguson 2016), in addition to given higher decision-making power to the manager to determine the innovation adoption and implementation within the NPM governance model (Bysted and Jespersen 2014). Finally, under these conditions, public sector service providers are sharing similar management style and governance explicit system (Peters 2013), similar methods for innovation adoption and implementations (Halvorsen et al. 2005), and similar innovation inputs, processes, and outcomes (Arundel, Bloch and Ferguson 2016). These conclusions are leading to consider higher education service providers like any other public service provider following the NPM governmental model (Ferlie, Musselin and Andresani 2008). Hence, innovation outcomes for public sector higher education service providers are in concept similar to the other public sector service provider taking into consideration the differentiation in the outcomes applications service-wise and product-wise.

One of the main drivers of this research is to identify the innovation agents that increase the emergence of innovation in the public sector. For innovation to emerge, there are needs at individual intellectual capabilities, competencies, and behaviour to create new ideas and innovate in the right environment (Hero et al. 2017). Also, there are needs at the group level (management and employees) to work collaboratively to create novel ideas and transform them into process and implementations (Aulawi et al. 2009) supported by a team of experts from several domains (Anderson et al. 2014) to facilitate innovation generation and implementation. Furthermore, there are needs at the organisational level to have the right climate that motivates and encourages

innovation through disposing of the required resources to facilitate the emergence of innovation (Popa et al. 2010), and accept innovation risk with minimal resistance (Townsend 2013).

On the other hand, innovation needs a market or could create a new market in order to be measured and consumed (Simmonds 1986) and (Uzunbacak 2015) in addition to time for adoption and implementation (Roger 2003). Also, innovation needs a community that creates the right environment for innovation to emerge where citizens participate in adopting an innovation (Carter and Belanger 2005), and government legislation to facilitate and support innovation (Perkins and Zimmerman 1995), (Bekkers et al. 2011), (Barry 2012) and (Rohman 2014). Furthermore, innovation needs technology to facilitate innovation generation, adoption, and implementation (Bekkers and Homburg 2005), (Walker 2014), and (Janowski 2015). Finally, innovation in the public sector should lead to an increase in efficiency, effectiveness, and customer satisfaction in addition to tackling social problems, involve citizens and private sector (De Vries et al. 2016) that are considered as innovation outcomes and could be modelled as product, process, or service. Hence, innovation requires a creative idea, time for adoption, motivated and competent individuals, collaborative group supported by experts from several fields, hosting organisation, a market for execution and measurement, a community for regulation and consumption, and technology for development and execution that all working together towards achieving the targeted outcomes that all could be defined as innovation agents that support innovation generation and implementation.

Emergence of innovation is a complex phenomenon that requires many properties incorporated in a way to fit each other and at the same time interacting in an absolute harmony through specific circumstances to produce the assumed or unpredicted innovative result at the more

extensive whole (Hero et al. 2017). In this research, the focus will be on the agents that support the emergence of innovation in the public sector service providers and enhance the innovation outcomes rather than discussing the emergence of innovation occurrence as a phenomenon. The defined Innovation agents in the previous paragraph been renamed and constructed in this research to form the research conceptual framework. In one hand, the global construct of humans and systems representing the independent variables is named by the Emergence of Innovation Drivers (EID) and comprises of two main facets: the first one is Innovation Human Drivers (IHD) that is consists of the empowered employee, management support, and a team of experts. The second facet is Innovation System Drivers (ISD) that is consists of the organisation and external environments like government and community. On the other hand, the innovation outcomes in the public sector representing the dependent variable are named by Emergence of Innovation Outcomes (EIO) that is consists of product, services, process, effectiveness, efficiency, and satisfaction. Finally, Cultural Intelligence will be utilised as an influencer on the relationship between the defined variables.

Innovation drivers should be exerted in an empowering, empowered, and associated environments (organisation and community) targeting specific outcomes in order to be acknowledged and supported by the leadership. This research is assuming that the Innovation Human Drivers, Innovation System Drivers, CQ, needs, purpose, acceptance, and time are forming an innovation Ecosystem (InE) for public sector higher education service providers. This InE will increase the opportunity for the innovation to be adopted, taking into consideration resources, time and technology for development and execution. Also, the emergence of innovation requires a reciprocal (purpose and acceptance) from both public organisations and community in order to

activate the InE to produce innovative solutions. Finally, by having the InE braced by purpose and acceptance to work as a system at the macro level; the public sector service providers will have the opportunity to become the right environment for innovation incubation and execution. This is partially answering the research question 1. However, there is a need to investigate how this InE would work to produce the required and desired outcomes, which will be introduced in the next paragraphs.

8.3. Descriptive Analysis Findings Discussion

Based on the survey analysis, the adoption of Simple Random Sampling (SRS) was successful as all targeted demographics were represented (Thompson 2013), and contributed to the necessary diversification as intended. There was a balance in gender representation in addition to participation from all over the country. Also, participants nationalities were from all over the world, which supports the success of the assumed moderation and mediation effect of CQ notion on the prediction of the dependent variable via the independent variables. Furthermore, when it comes to the age range, all categories were covered with a domination of the (40-49) years followed by (31-39) years. Moreover, years of experience were fairly distributed in general with more participation from those who possess more than 11 years of experience in higher education. Similarly, a range of job levels were represented with more than half of the sample from academic faculty. In addition, the education levels were represented with a large portion of master degree followed by the PhD & Bachelor and dropped to diploma and high school. Finally, almost three-quarters of the participants were married, and the other categories also were represented. Hence, such diverse

sample full representation for all categories represented is considered well representing the public sector higher education providers following SRS concept.

8.4. Validity of the Results Discussion

In order to make sure that the total variance of one factor is not exceeding 50% (Conway and Lance 2010), a Common Method Variance (CMV) test took place to make sure that the used instrument is not going to produce bias. The results showed that ten principal components are having a loading more than one, and at the same time, the first component rotation sums of squared loading is 21%, and so, the used instrument does not produce bias (Podsakoff, MacKenzie and Podsakoff 2012). On the other hand, to make sure that the constructed variables have an acceptable level of validity and reliability. The 162 completed responses were tested for validity that showed a significant correlation with $p < 0.05$, which means that the questionnaire is measuring what is intended to measure (Kimberlin and Winterstein 2008). On the other hand, testing for the reliability took place for the defined ten variables, and based on Cronbach Alpha test; all variables scored more than (0.83), which means that they are highly reliable and the survey may measure the variables in the same means at a different point in the time (Fiels 2009).

The final stage of this data testing process is the normality test that took place in order to make sure that the data are normally distributed in order to get reliable results and proceed to test the research hypotheses. This research is following the accepted values of skewness and kurtosis the should be between “ ± 2.58 at 0.01 significance level or ± 1.96 at 0.05 significance level” as

stated by Hair et al. (2010), and any value beyond that will be considered nonnormal. All variables skewness and kurtosis were between ± 2.58 at 0.01 significance level or ± 1.96 at 0.05 significance level but not EIO with kurtosis value for 4.456 that violates the accepted interval. However, the EIO normality was enhanced by centralising and standardising its entries followed by reflected square root process (Osborne 2010). The results for EIO showed a significant enhancement with skewness and kurtosis falling in the accepted range. The same normality enhancement process took place on the rest variables that resulted in having all ten variable normally distributed.

8.5. Frequencies Discussion of the Research Constructs:

The responses frequencies for the 64 questions were on the Likert scale of 5, where one represents strongly disagree, and five strongly agree. The highest frequencies answers were at scale 4 = agree, which means that most there is a high level of concordance among the questionnaire participants on the prominence of innovation drivers and outcomes in the public sector. The Emergence of Innovation Outcomes has the highest-ranked frequency, followed by Organisation Behaviour, Employee Empowerment, Board of Innovation Provision, Environment Readiness, Cultural Intelligence, and Line Manager Support. It is noticed that the range of the scores related to the variable means is relatively small from 2.94 to 4.4, with the highest range with most of the scores above 3.02. This result shows that more than 71% of the participants agree on the significance of adopting the innovation drivers at the individual, group, organisational, and community levels to make the public sector higher education service providers the right

environment for innovation to emerge. The facets IHD, ISD, and EID were intentionally not included in the frequency summaries as they form the sum of the other variables.

For Employee Empowerment score around 62% supported this variable overall factors in autonomy in managing job (De Vries et al. 2016), influence on decision making and process implementation (Bolat 2003), access to resources (Laschinger et al. 2004), access to the customers (Kelley and Lee 2010), access to peers Uzunbacak (2015), access to two way communication with senior management (Bester, Stander & Van Zyl 2015), access to training (Balcazar et al. 1990), career progression(Mendoza-Sierra et al. 2014) , and time to adopt and implement innovation Uzunbacak (2015). These results indicate a level of support to the Employee Empowerment selected factors, and at the same time, shows a high percentage of Employee Empowerment in the public sector higher education service providers. On the other hand, Around 15% were undecided, and around 22% are considered not empowered, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education.

For Line Manager Support, around 68% declared that they are receiving support from their line manager who encourages new ideas contingencies (West 1990), allocate resources (Uzunbacak 2015), accept failure as opportunity Laschinger (2004), support working without fair if mistakes were committed (Hudea 2014), appreciating multicultural settings (Awan and Kraslawski 2017), authority to practice the job (MacPhee et al. 2014), involvement in decision making in addition to process development and implementation (Kelley and Lee 2010), two-way professional communication (Uzunbacak 2015), support performance through development plan (Rehg et al. 2012) . These results indicate a level of support to the Line Manager Support selected factors, and

at the same time, shows a high percentage of Line Manager Support in the public sector higher education service providers that also supports getting 62% of empowered employees. On the other hand, Around 14% were undecided, and around 19% are considered not supported by their line managers, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education.

Based on the responses related to Board of Innovation Provision, around 60% agreed on the fact that Board of Innovation Provision contributes in support the emergence of innovation in public sector through (sharing experience from several fields, aligning the innovation with the government rules and regulations, aligning the innovation with the community beliefs and core values, using organisational capabilities to facilitate innovation development and implementation, utilizes their understanding of the market needs to support innovation generation and implementation, utilizes their understanding of customer needs to support innovation generation and implementation towards customer satisfaction) West (1990), (Woodman et al. 1993), (Zhou 2006), (Hulsheger et al. 2009), (Stahl et al. 2009), (Anderson et al. 2014), (Sarooghi 2015), and (Uzunbacak 2015). These results indicate a level of support to the Board of Innovation Provision selected factors, and at the same time, suggests to adopt this concept to support the emergence of innovation in the public sector higher education service provider. On the other hand, Around 33% were undecided that might be due to the concept newness to them, and around 7% did not believe that this concept supports innovation in the public sector higher education.

Based on the responses related to Organisation Behaviour, around 60% considered their organisation supporting innovation through (encourages teamwork, implement new ideas,

delegates authority to implement innovative ideas, decisions are made in consultation with the employees, facilitates open communication channels, allocate resources that supports and encourages new ideas, vision and mission encourage innovation, plans to put new ideas into practice, consider innovative practices during performance appraisal, removes barriers that hinder innovation, open to adopting innovation and change to meet technology revolution and market needs, rewards achievements and appreciates success) Spreitzer (1997), (Weber 1947), (Rappaport 1981), (Conger and Kanungo 1988), Kanter (1993), (Zimmerman and Warschausky 1998), (Zimmerman 2000), (Orgambídez-Ramos and Borrego-Alés 2014), (Chandan 2015), (Glenn 2017), and Uzunbacak (2015) . These results indicate a level of support to the Organisation Behaviour selected factors, and at the same time, shows a high percentage of innovative organisational behaviour in the public sector higher education service provider that also supports getting 62% of empowered employees. On the other hand, Around 20% were undecided, and around 20% considering their organisation does not support innovation, which might create a burden on supporting the emergence of innovation outcomes in the public sector higher education.

Based on the responses related to Environment Readiness, around 62% considered their internal and external working environment is ready to innovate through (rules and regulations to facilitate innovation adoption and implementation, creating working environment that is the right environment for innovation to emerge and implement, having customers open to new ideas and willing to accept change, customers participation in developing our services or products, having a market that is a competitive environment and encouraging to generate and produce innovative solutions, having customer needs that are dynamic and subject to change which requires continuous innovation) from (Dahl 1961), Spreitzer (1997), (Berger and Neuhaus 1977), (Rappaport 1981),

(Rappaport 1984), (Simon 1994), (Zimmerman and Warschausky 1998), (Zimmerman 2000), (Edquist 2005), (Adams 2008), John (2012), (Barry 2012), and Uzunbacak (2015). This result indicates a level of support to the Environment Readiness selected factors, and at the same time, shows a high percentage of environment readiness in the public sector higher education services providers that also could be influenced by having 62% of empowered employees. On the other hand, Around 23% were undecided, and around 14% considering their internal and external working environment are not ready to innovate.

For Cultural Intelligence, around 86% possess a high level of CQ by (seek and integrate experiences that broaden understanding of the culture of others to discuss and adopt innovative ideas, incorporate diverse legal and economic perspectives when working with other in innovation, have awareness of the cultural values and religious beliefs that encourages developing new ideas, Initiate, engage, develop, and values interactions with the culture of others, ability to deal with the stresses of adjusting to a new culture, varying the rate of speaking in a cross-cultural situation, change non-verbal behaviour in a cross-cultural interaction) Earley and Ang (2003), Ang et al. (2006), Ang et al. (2007), Thomas et al. (2008), Thomas et al. (2015), and Bucker et al. (2015). This result indicates a level of support to the CQ selected factors, and at the same time, suggests to adopt this concept to support the emergence of innovation in the public sector higher education service providers. On the other hand, Around 12% were undecided that might be due to the concept newness to them, and around 3% considered with a low level of CQ.

Based on the responses related to Emergence of Innovation Outcomes, around 83% agreed that the emergence of innovation outcomes would participate to (Process, Product, Services,

Customer Satisfaction, Effectiveness, Efficiency) Schumpeter (1934), Schumpeter (1942), Simmonds (1986), March and Olsen (1989), Damanpour (1991), Goldstein (1999), Rogers (2003), Weber et al. (2004), Carter and Belanger (2005), Humphreys (2006), Deguet et al. (2006), Rickles et al. (2007), Van Alstyne and Logan (2007), Toivonen and Tuominen (2009), Damanpour and Aravind (2011), Bekkers et al.(2011), Uzunbacak (2015), and De Vries et al. (2016). These results indicate a level of support to the Emergence of Innovation Outcomes selected factors in this research in the way to support and benefit from transforming the public sector higher education service providers to the right environment for innovation to emerge and achieving the higher education outcomes. On the other hand, around 13% were undecided, and around 4% considered the emergence of innovation in the public sector higher education service providers would not support achieving the required outcomes, which is considered a low percentage comparing with the domination of responses that agree on this concept.

8.6. Association Findings Discussion

For initial research four hypothesis testing, a Pearson Correlation test took place to identify the initial type of association between the independent and dependent variables. The First step is the testing of the association between the Innovation Human Drivers and the Emergence of Innovation Outcomes in the Public Sector. EE was positively correlated with EIO at $p < 0.01$ that indicated a higher level of Employee Empowerment would increase the Emergence of Innovation Outcomes in the public sector. The same result was found by (Uzunbacak 2015) in the private sector context, which means that this facet has a high potential to be adopted in the public sector

higher education service providers. For LMS, a positive correlation at $p < 0.01$ was founded with EIO, which means that a higher level of Line Manager Support might increase the Emergence of Innovation outcomes, which is also was supported by (Hudea 2014) conceptual model of positive leadership that contributed to innovation outcomes.

For BIP, the positive correlation at $p < 0.01$ with EIO indicates a high level of the Board of Innovation Provision will lead to an increase in the Emergence of Innovation Outcomes in the public sector. This result is supported by (Anderson et al. 2014) as a group of experts from several fields would support innovation outcomes. Finally, The integrated Facet of IHD was positively correlated with EIO at $p < 0.01$ which indicate a higher level of Innovation Human Drivers defined in this research would increase the Emergence of Innovation Outcomes in the public sector. These distinctive results show a positive correlation at both micro and macro levels, which prove the association of positive influence between IHD and EIO, and hence, H1 initially accepted.

The second step is the testing of the association between the Innovation System Drivers and the Emergence of Innovation Outcomes in the Public Sector higher education service providers. OB was positively correlated with EIO at $p < 0.01$, that indicates a higher level of Organisational Behaviour would increase the Emergence of Innovation Outcomes in the public sector. This result is supported by many scholars like (Kelley and Lee 2010) but from the private sector concept, which means that the organisational behaviour might have a positive influence toward innovation adoption and implementation as a lesson learned from the private sector in the context of the public sector. The same positive correlation at $p < 0.01$ was founded in ER that indicate a higher level of Environment Readiness will lead to an increase in the Emergence of Innovation Outcomes in the

public sector. This result was supported by many scholars like (Zimmerman 2000), (Wu et al. 2011), (Bekkers et al. 2011), (Lee et al. 2012), and (Uzunbacak 2015). Finally, the integrated Facet of ISD was positively correlated with EIO at $p < 0.01$, which indicate a higher level of Innovation System Drivers would increase the Emergence of Innovation Outcomes in the public sector. Also, this result is supported by (Zimmerman 2000), (Rogers 2003), and (Uzunbacak 2015), taking into consideration the adoption of the provided concepts. These distinctive results show a positive correlation at both micro and macro levels, which prove the association of positive influence between ISD and EIO, and hence, H2 initially accepted.

The third step is the testing of the association between the Emergence of Innovation Drivers and the Emergence of Innovation Outcomes in the Public Sector. EID has a significant positive correlation with EIO at $p < 0.01$ that indicated a higher level of the Emergence of Innovation Drivers as a global effect (Individual, Group, Organisation, and Community) would increase the emergence of innovation outcomes in the public sector, which prove the association between EID and EIO, and hence, H3 initially accepted. Table (74) below provides a summary of the association findings.

Research Questions	Research Hypotheses	Hypotheses Accepted / Rejected
Q2: How does Innovation Human Drivers (Employee Empowerment, Line Manager Support, Board of Innovation Provision) influence the Emergence of Innovation Outcomes in the public sector service providers?	H1: The Innovation Human Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Service Providers.	Accepted
Q3: How does Innovation System Drivers (Organisation Behaviour, and Environment Readiness) influence the Emergence of	H2: The Innovation System Drivers would associate with the Emergence of Innovation Outcomes in the Public Sector Service Providers.	Accepted

Innovation Outcomes in the public sector service providers?		
Q4: How does the Emergence of Innovation Drivers influence the Emergence of Innovation Outcomes in the public sector service providers?	H3: Emergence of Innovation Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Service Providers.	Accepted
Q5: How does cultural intelligence impact the Emergence of Innovation Drivers to influence the emergence of innovation outcomes in the public sector service providers?	H4: Cultural Intelligence would influence the association between Emergence of Innovation Drivers and Emergence of Innovation Outcomes in the Public Sector Service Providers.	This hypothesis requires more explanation as shown in Table (75) Testing Results

Table (74) Hypotheses Association Testing Results

This model of the empowered individual (Rogers 2003), (Indra 2011), and Uzunbacak (2015), empowered and empowering organisation (Malone 2004) , and (Glenn 2017), and empowering community (Minkler 1990) and (Zimmerman 2000) are creating the right conditions for the emergence of innovation in the public sector higher education service providers. This unique model of EID (IHD, ISD) and EIO introduced in this research is showing promising results at both micro and macro levels that encourage adopting them as components of the Innovation Ecosystem for the public sector. However, it is still early for such conclusion as further investigation should take place for proving this concept. On the other hand, there was a significant positive weak to moderate correlation between the CQ and all independent variables and the dependent variable at $p < 0.01$, which ground the floor for using this variable as a moderator or mediator that will be decided by interpretation of the regression results in the next section. For testing the fourth hypothesis and answering question number five, it requires furthering the investigation of CQ influence as a moderator and as a mediator, which will be discussed in the following section.

8.7. Regression Analysis Discussion

This section provides the discussion on the three modules of independent and dependent variable relationships (Direct Effect, Moderator Effect, and Mediator Effect) towards developing the conclusion in line with the literature review.

8.7.1. Discussion of Direct Effect of EID on EIO:

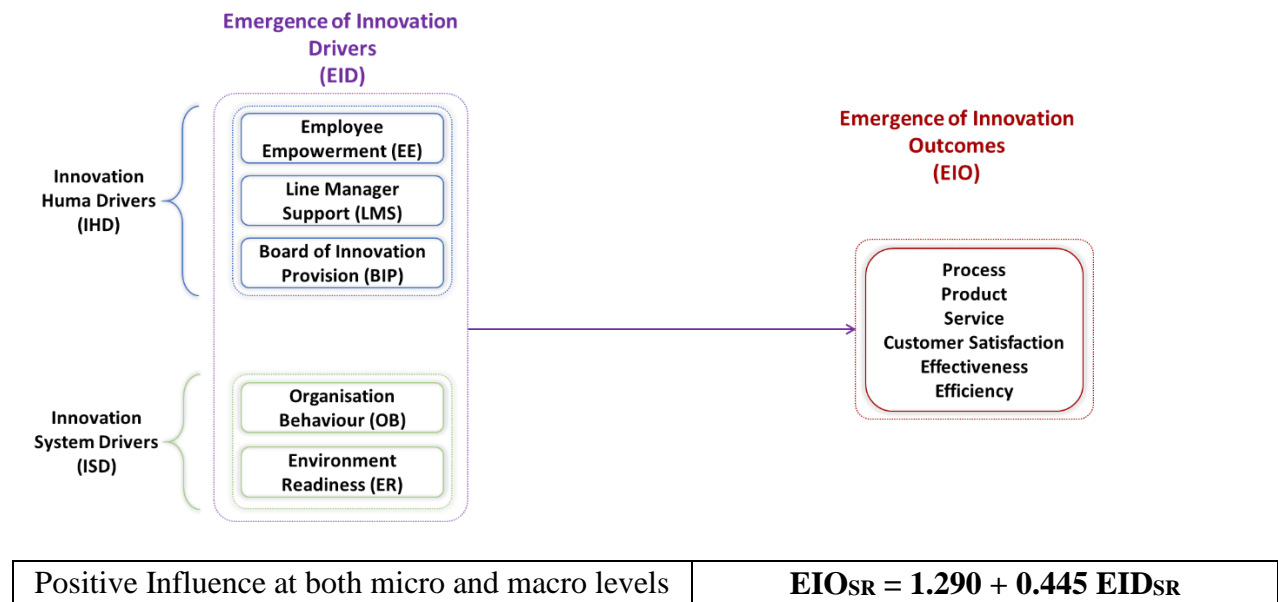


Figure (57) Direct Effect of EID on EIO

Starting with Employee empowerment as EE_{SR} exhibited a positive influence on the EIO_{SR} , which means that an increase in Employee Empowerment would lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. This result is confirming the Fernandez and Moldogaziev (2013) conclusions related to public sector innovation when they emphasised the fact that “Empowered employees improve performance

largely by finding innovative ways of correcting errors in service delivery and redesigning work processes” and “employee empowerment as an overall approach can increase encouragement to innovate”. Also, this result is in line with the conclusions of (Schumpeter 1934), (Schumpeter 1942), (Freire 1974), (Zimmerman 1986), (Rappaport 1987), (Kanter 1993), (Perkins 1995), (Zimmerman 2000), (Greco et al. 2006), (Townsend 2013), (Uzunbacak 2015), (De Vries et al. 2016), (Glenn 2017), and (Hero et al. 2017) as employee empowerment will lead to creating the right environment for innovation to emerge.

Line Manager Support LMS_{SR} exhibited a positive influence on the EIO_{SR} , which means that an increase in Line Manager Support would lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. Similar conclusions for line manager, in general, were supported by Dobbs (1993), Kanter (1993), King and Ehrhard (1996), (Spreitzer 1996), (Cacioppe 1998), (Niehoff et al. 2001), (Robbins et al. 2002), (Hudea 2014) and Laschinger (2004) as cited in Uzunbacak (2015) for leadership behaviour (supports new idea, accept failure, empowerment, delegate authority, effective communication, and support multicultural settings) and resources allocation would increase the organisation innovativeness. In the same context, leaders with positive behaviour are creating a positive performance culture that encourages individual creative thinking that leads to influence the organisational outcomes (Fong and Snape 2013). Finally, this result was supported by the Uzunbacak (2015) findings as “The main objective of managers should be to create a pro-innovation and encouraging organizational environment, to create an appropriate vision and decide on the strategies which will make it possible to benefit from the organizations”.

Board of Innovation Provision BIP_{SR} exhibited a positive influence on the EIO_{SR} , which means that an increase in Board of Innovation Provision would lead to an increase in the Emergence of Innovation Outcomes in the public sector higher education service providers. This finding is in line with the conclusions of Anderson et al. (2014), as innovation requires a team of experts from diverse domains to emerge. In the same context, Aulawi et al. (2009) added that innovation adoption requires a team from management and employees in order to achieve innovation outcomes. Also, creativity, in general, could be produced by teams embedded in the organisations Zhou (2006), as cited by Adrenson et al. (2014). Furthermore, Anderson and West (1998) indicated that the innovation team who accept the organisation values and supported by the organisation would facilitate innovation adoption. Finally, it is worth to mention that sometimes team from several backgrounds with less cohesiveness and common understanding might cause a passive influence on innovation generation (Yousoufpourfard 2010) depending on to which extent they could partner and excel in a multicultural setting (Awan and Kraslawski 2017).

Innovation Human Drivers IHD_{SR} , the whole of (EE, LMS, and BIP), has exhibited a positive influence on the EIO_{SR} , which means that an increase in Innovation Human Drivers would lead to an increase in the Emergence of Innovation outcomes in the public sector higher education service providers. Such a positive influence between the Innovation Human Drivers and the Emergence of Innovation outcomes in the public sector higher education service providers at both micro and macro levels is showing a type of association as a positive influence between the variables, and this conclusion is answering research question 2.

For Organisational Behaviour OB_{SR} , the results showed a positive influence on EIO_{SR} , which means that an increase in Organisational Behaviour would lead to an increase in the Emergence of Innovation outcomes in the public sector higher education service providers. This finding is in line with the results of Popa et al. (2010) when explained that innovation at an organisational level requires “dispose of the necessary resources, a strong motivation to innovate and an organizational climate that allows and encourages the emergence of innovative ideas”. Also, Zimmerman (2000) stated that “empowered organisations are those that successfully thrive among competitors, meet their goals, and develop in ways the enhance their effectiveness”. Furthermore, Glenn (2017) stated that “An empowered organisation is one that is democratically managed, and its members share information and control over decisions and are involved in the design, implementation and monitoring of efforts toward goals defined by group consensus”. Finally, an organisation’s competitive advantage requires innovation to emerge towards increase the organisation competitive power and profitability (Uzunbacak, 2015).

Environment Readiness ER_{SR} has shown a positive influence on the EIO_{SR} , which means that an increase in Environment Readiness would lead to an increase in the Emergence of Innovation outcomes in the public sector higher education service providers. This finding is confirming the conclusions of Rogers-Dillon (1999) and Edquist (2005) as Laws, regulations, cultural norms, and social rules are shaping the conditions of innovation, in addition to the fact that they “can have a significant impact on stimulating innovation” as stated by Bloch and Bugge (2013). Also, “deregulation and innovation in public service delivery are increasingly accepted as necessary by local governments pursuing economic development” as argued by Wu et al. (2011). Furthermore, New Public Management target is to reduce system complexity, resources utilisation, implement

product enhancement, cost optimisation, create a better environment for private sector investments, and eventually satisfy customers (Osborne 2010). Moreover, market competition continually increased, which requires the organisation to support and allocate resources for innovation (Uzunbacak 2015). Finally, market needs are dynamic and require an innovative environment to accommodate them (Zimmerman 2000). Hence, the readiness of the internal and external environment is positively influencing the emergence of innovation in the public sector higher education service providers.

Innovation System Drivers ISD_{SR} , the whole of (OB and ER), has exhibited a positive influence on the EIO_{SR} , which means that an increase in Innovation System Drivers would lead to an increase in the Emergence of Innovation outcomes in the public sector higher education service providers. Such a positive influence between the Innovation System Drivers and the Emergence of Innovation outcomes in the public sector higher education service providers at both micro and macro levels are showing a type of association as a positive influence, and this conclusion is answering question 3.

The last step in the Direct Effect is testing the global effect, where Emergence of Innovation Drivers EID_{SR} the whole of (IHD and ISD) has a positive influence of the EIO_{SR} , which means that an increase in Emergence of Innovation drivers would lead to an increase in the Emergence of Innovation outcomes in the public sector higher education service providers. Such a positive influence between the Emergence of Innovation Drivers and the Emergence of Innovation outcomes in the Public sector at both micro and macro levels is showing a type of association as a

positive influence, and this answering question 4. For more details on the prediction equations, please refer to Table (30) Regression Summary for the Direct Relationship between the variables.

To conclude, the first three accepted hypotheses show a kind of successful selection and construction of the variables that formed this research conceptual framework, which confirms the results in Table (73) Hypotheses Association Testing Results. This association might have a better result generalisation by completing the H4 related tests (CQ as a moderator and as a mediator).

8.7.2. Discussion of CQ as a Moderator on EID Predicting EIO:

The following points are presenting the regressions tests and their interpretation that took place on the independent and dependent variable with the influence of CQ as a moderator.

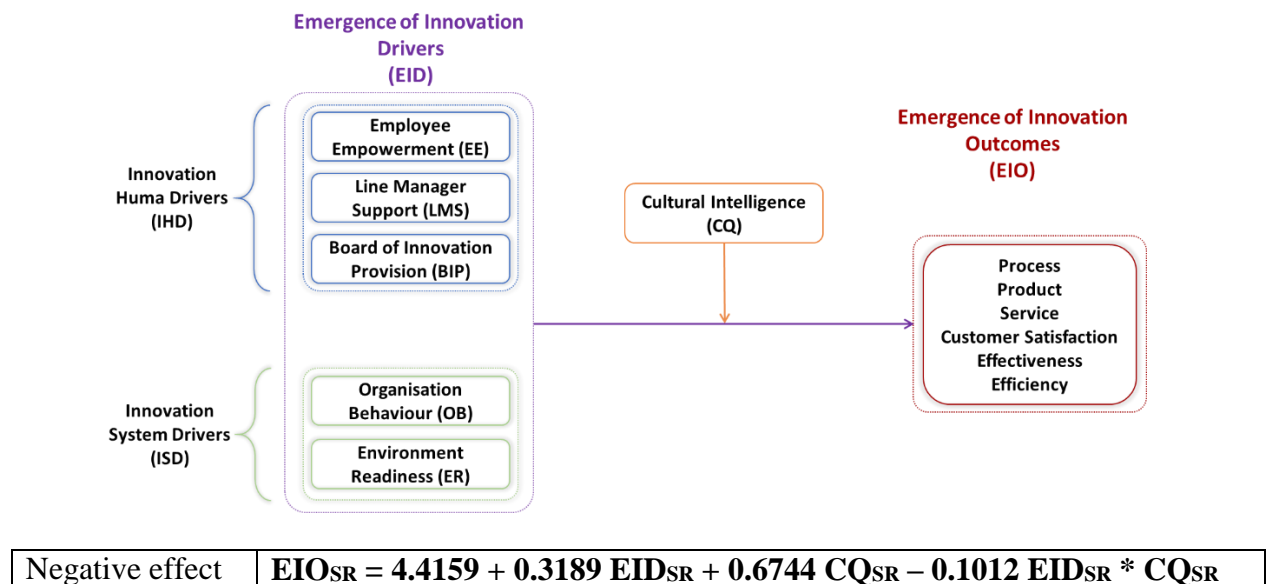


Figure (58) CQ as a Moderator on EID Predicting EIO

Starting with Employee Empowerment EE effect on EIO moderated by CQ, the results showed that CQ_{SR} has a moderator effect on EE_{SR} predicting EIO_{SR} in a decreasing means. The interaction between CQ_{SR} and EE_{SR} result was negative, which means that when CQ is considered as an external factor in employee empowerment towards enhancing the emergence of innovation outcomes, such effect might decrease the emergence of innovation outcomes. This result was not in line with (Elenkov and Manev 2009) findings, however, this result was supported by (Wu and Ang 2011) with a recommendation for those organisation who are hiring overseas employees to consider CQ as a performance indicator in order to provide the required training to enhance their performance taking into consideration the fact that CQ as a moderator is negatively influencing their performance.

When it comes to Line Manager Support LMS, the results showed that CQ is not acting as a moderator on LMS_{SR} predicting EIO_{SR} as the interaction between LMS_{SR} and CQ_{SR} was not significant. This is a unique result that occurs either from the fact that line managers in the public sector higher education service providers need training on how to perform in a cross-cultural working environment, or the CQ concept newness in the public sector led to not adopting it in this environment. This result is supporting Kanter (1995) conclusion related to the need of having a new type of managers who are capable of operating in a more profound cross-cultural difference. A similar conclusion was found by Early and Ang (2003), who proposed a set of individual capabilities and relevant competency to overcome the cross-cultural challenges. Also, managers could use CQ training to increase employees effectiveness as argued by Rehg et al. (2012) to overcome CQ passive influence as an external factor. On the other hand, this LMS finding was not in line with the conclusions of Elenkov and Manev (2009) were CQ as moderator increased the

leadership innovation adoption, as well as having a positive impact on leadership adjustment and performance (Lee et al. 2013).

Similarly, the results showed that CQ is not acting as a moderator on the Board of Innovation Provision BIP_{SR} predicting EIO_{SR} as the interactions between BIP_{SR} and CQ_{SR} were not significant. This is also a unique result that occurs either from the fact that board of innovation in the public sector need training on how to perform in a cross-cultural working environment, or the CQ and Board of Innovation Provision concepts newness in the public sector led to not adopting it in this environment. This conclusion is confirming the fact that team from several backgrounds with less cohesiveness and common understanding might cause a passive influence on innovation generation (Yousoufpourfard 2010) depending on to which extent they could partner and excel in a multicultural setting (Awan and Kraslawski 2017). Also, CQ facets (motivational and metacognitive) has a negative influence on the shared values of the heterogeneous team (a team from different backgrounds) as concluded by Adair, Hideg, and Spence (2013). However, the finding of BIP was not in line with the conclusions of Adair, Hideg, and Spence (2013) as CQ facets (behavioural and metacognitive) has a positive influence on the shared values of the homogeneous team (a team from similar backgrounds). Hence the BIP formation and cohesiveness might be positively or negatively influenced by CQ as a moderator.

When CQ is used as a moderator on Innovation Human Drivers IHD (the whole of EE, LMS, and BIP) predicting EIO, the result was not significant at the macro level. This result is a normal consequence of CQ was not acting as a moderator at the micro-levels (EE, LMS, and BIP). Hence, CQ as a moderator, (an external factor) has a negative or passive influence on IHD predicting EIO.

On the other hand, when testing CQ moderator effect on Organisational Behaviour OB predicting EIO, the results showed that CQ_{SR} has a moderator effect on OB_{SR} predicting EIO_{SR} in a decreasing means. The interaction between CQ_{SR} and OB_{SR} result was negative, which means that when CQ is considered as an external factor of organisation behaviour towards enhancing the emergence of innovation outcomes, such effect might decrease the innovation outcomes in the public sector higher education service providers. This finding confirming the conclusion of Wu and Ang (2011) as the CQ facets (metacognitive and cognitive) have a negative moderator effect on the organisation performance when not supporting those employees with low CQ level. Also, the results of Bird and Mendenhall (2016) and Hudea (2014) showing the fact that positive multicultural organisational management leads to building innovation culture with the organisation that produces innovation, enhance performance, keep competitive advantage and reputation. By considering this conclusion, and when having an organisation with negative multicultural management that is not supporting the innovation culture, an increase of this negative behaviour will lead to decrees in the emergence of innovation and vice versa. On the other hand, the OB findings were not in line with the Wu and Ang (2011) demonstration of their results related to organisation support as the CQ facet (motivational) had a positive moderating effect on the organisational performance and innovation adoption.

For Environment Readiness, the results showed that CQ is not acting as a moderator on ER_{SR} predicting EIO_{SR} as the interactions between ER_{SR} and CQ_{SR} were not significant. Such unique result might occur either from the fact that Environment Readiness is not supporting the multicultural working environment, or the newness of CQ concept in the public sector higher

education service providers led to not adopting it in this environment toward enhancing the outcomes. This finding is confirming the conclusions of Ramsey et al. (2011) when they used CQ as a moderator on Institutional Distance (regulatory, normative and cultural-cognitive), they found that “reducing travel and job strain will result in an increase in trip satisfaction and performance”. However, CQ as a moderator has a positive influence on the leadership that results in improving innovation adoption and employee performance (Elenkov and Manev 2009), and this might occur when the leadership adopts rules and regulations that support creating an environment for innovation to emerge. In this case, the ER result in this research is not in line with this conclusion. On the other hand, if the organisational leaders have a negative leadership style towards creating a multicultural innovation environment, the increase of this passive management style will lead to decrease the emergence of innovation as shown in this research. Here, it is worth to mention that there is a lack of studies that are discussing the CQ at situation, team, and organisation levels that requires further investigation as stated by (Ng et al. 2012), this also includes internal and external environments.

For Innovation System Drivers ISD_{SR} the whole of (OB and ER) predicting EIO_{SR} with CQ_{SR} as a moderator, the results showed that CQ_{SR} as a moderator has a decreasing effect on ISD_{SR} predicting EIO_{SR} . This decreasing means that CQ as an external effect on the Innovation System Drivers (Organisation Behaviour and Environment Readiness) will act negatively on the emergence of the innovation in the public sector higher education service providers. These unique findings should be considered as an indicator of the negative influence between internal and external environments due to cultural differences. There is a need to synchronise these environments via increasing the CQ as the observed cultural gap is leading to a decrease in the

emergence of innovation outcomes in the public sector higher education service providers. Hence, CQ, as a moderator, has a negative influence on ISD predicting EIO.

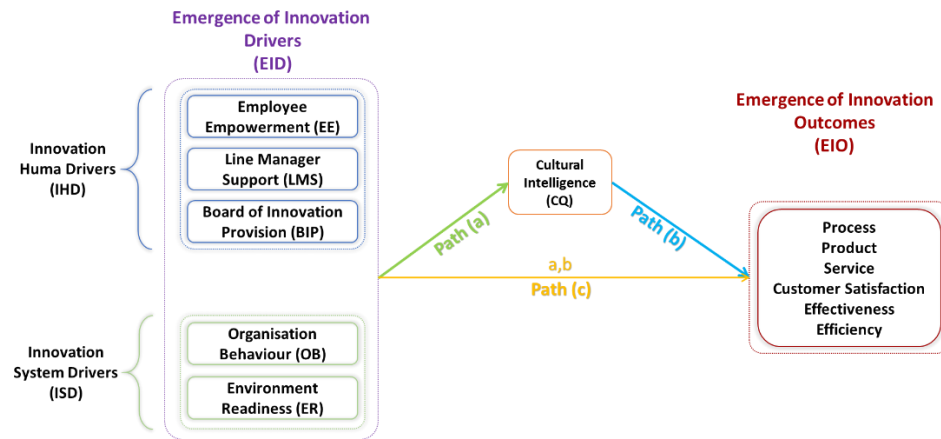
At the global level of Emergence of Innovation Drivers, the whole of (IHD and ISD) predicting the Emergence of Innovation Outcomes in the public sector with CQ as a moderator. The results showed that the effect of CQ_{SR} as a moderator at the global level is causing a decreasing influence on EID_{SR} predicting EIO_{SR} . This conclusion is a normal consequence of CQ was not acting as a moderator at the macro levels (IHD and ISD). These findings lead to conclude that Cultural Intelligence as an independent factor (outer) is not positively supporting the Emergence of Innovation Drivers to increase the Emergence of Innovation Outcomes in the public sector higher education service providers. These unique findings should be considered as an indicator of the negative influence between internal and external environments at the micro and macro levels when considering CQ as an external influencer. There is a need to synchronise these environments via increasing the CQ as the observed cultural gap is leading to a decrease in the emergence of innovation outcomes in the public sector higher education service providers. Hence, CQ, as a moderator, has a negative influence or not supporting EID predicting EIO.

In summary, for those organisations, especially public sector service providers, there is a need to increase the CQ level in order to enhance innovation outcomes. Rigid systems that have been adopted in the public sector are not supporting them to excel in a way to become more innovative. Nowadays, most of the working environments are multicultural with open economies, which includes the cultural differences between those who are considered as service providers and those who are considered as service consumers. By having CQ bridges between internal and

external environments to create a better understanding of the multicultural needs, innovation might have enhanced opportunities to emerge in the public sector in general and more particularly the public sector higher education service providers.

8.7.3. Discussion of CQ as a Mediator on EID predicting EIO:

The following points are presenting the regressions tests and their interpretation that took place on the independent and dependent variable with the influence of CQ as a moderator.



Positive Influence at both micro and macro levels enhanced from the direct effect (see table Table (72))

Figure (59) CQ as a Mediator on EID Predicting EIO

Starting with Employee Empowerment where CQ_{SR} has a positive influence on EE_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Employee Empowerment predicting Emergence of Innovation Outcomes the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes. CQ has positively influenced and

increased the association between EE and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through employee empowerment with high CQ level. This result is in line with Moon et al. (2012) and (Sri et al. 2012) as CQ mediation supported by the interaction with work adjustments that enhanced the prediction of job performance that lead to innovation adoption.

Also, CQ_{SR} has a positive influence on LMS_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Line Manager Support predicting Emergence of Innovation Outcomes in the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes. CQ has positively influenced and increased the association between LMS and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through Line Manager Support with high CQ level. This result supports the findings of (Kim and Va Dyne 2011), (Musamali and Martin 2016), and (Rockstuhl et al. 2011) as CQ mediation increases the effectiveness of leadership under the international context that leads to increase employee performance and create innovative work behaviour, which eventually leads to support innovation adoption.

Furthermore, CQ_{SR} has a positive influence on BIP_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Board of Innovation Provision predicting Emergence of Innovation Outcomes the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes. CQ has positively influenced and increased the association between BIP and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through the Board of Innovation Provision

with high CQ level. This result came with an agreement with (Remhof, Gunkel and Schlaegel 2014) that CQ supports individuals to excel in a multicultural context, in addition, to increase team cohesiveness and mutual understanding influence on innovation generation (Yousoufpourfard 2010) in a multicultural setting (Awan and Kraslawski 2017).

When CQ_{SR} used as mediator on Innovation Human Drivers IHD (the whole of EE, LMS, and BIP), the result was positive influence at the macro level on IHD_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Innovation Human Drivers predicting Emergence of Innovation Outcomes in the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes.

For OB where CQ_{SR} has a positive influence on OB_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Organisation Behaviour predicting Emergence of Innovation Outcomes in the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes. CQ has positively influenced and increased the association between OB and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through Organisation Behaviour with high CQ level. This finding is in line with (Korzilius, Bücken and Beerlage 2017) as CQ mediation supports innovative work behaviour under multiculturalism, in addition to increasing the leadership effectiveness (Rockstuhl et al. 2011). Also, the results of Bird and Mendenhall (2016) and Hudea (2014) showing the fact that positive multicultural organisational management leads to building innovation culture within the organisation that produces innovation, enhance performance, keep competitive advantage and reputation.

Also, CQ_{SR} has a positive influence on ER_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Environment Readiness predicting Emergence of Innovation Outcomes in the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes. CQ has positively influenced and increased the association between ER and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through Environment Readiness with high CQ level. This finding is in line with (Korzilius, Bücken and Beerlage 2017) as CQ mediation supports individuals to reconcile their cultural differences in the way to create a working environment where they can work as a catalyst in the multicultural settings, in addition to creating an environment for work adjustment towards enhancing the performance (Sri et al. 2012). These values empower the organisation leadership to adopt innovation and create the right environment for innovation to emerge.

For Innovation System Drivers ISD_{SR} the whole of (OB and ER) predicting EIO_{SR} with CQ_{SR} as a mediator, CQ_{SR} has a positive influence at the macro level on ISD_{SR} predicting EIO_{SR} , CQ has positively influenced and increased the association between ISD and EIO. This enhancement contributed to increasing the opportunities for the emergence of innovation in the public sector higher education service providers through Innovation System Drivers with high CQ level.

At the global level of Emergence of Innovation Drivers, the whole of (IHD and ISD) predicting the Emergence of Innovation Outcomes in the public sector higher education service providers with CQ as a mediator. CQ_{SR} has a positive influence at the macro level on EID_{SR} predicting EIO_{SR} , which means that CQ as a mediator on Emergence of Innovation Drivers

predicting Emergence of Innovation Outcomes in the public sector higher education service providers will lead to an increase in the Emergence of Innovation Outcomes.

In summary, CQ as a mediator that implies a causal effect on the independent variables and antecedent causal effect of the dependent variable is positively participating in increasing the effect. This result means that by adopting CQ as a mediator in Employee Empowerment, Line Manager Support, the Board of Innovation Provision, Organisation Behaviour, and environment Readiness; this will significantly lead to increase the emergence of innovation outcomes in the public sector higher education service providers.

8.7.4. Regression Tests Conclusions

Based on the results of the regression analysis, the direct effect of independent variables on the dependent variable was significantly positive in a way that an increase in the independent variables for both micro and macro levels will lead to an increase in the dependent variable. These results are showing the type of association between the variables as a positive influence, which supports the hypotheses H1, H2, and H3. On the other hand, CQ as a moderator and a mediator is influencing the Emergence of Innovation Drivers towards predicting the Emergence of innovation Outcomes in the public sector higher education service providers. When CQ act as a moderator, the impact was negative or passive on the emergence of innovation outcomes. This is based on the fact that CQ as a moderator is considered as an external factor to the individuals, group organisation, and working environment, which lead to decrease the opportunities for innovation to emerge in the public sector higher education service providers.

This result of adverse moderator effect on EID predicting EIO might be considered as a reciprocal finding of (Wu and Ang 2011) when the external act of CQ led to decrease the employee performance. Also, CQ adverse moderator effect on the directive leadership and leadership effectiveness means that CQ is not acting as a significant influencer on leadership style and effectiveness (Solomon and Steyn 2017). Leadership in the public sector higher education service providers are playing a significant role in facilitating the emergence of innovation; hence, by not adopting high CQ to be within the leadership style, there will be a risk on the emergence of innovation in the public sector higher education service providers. Furthermore, even though diversity has a positive influence on team creativity, quality and decision (Priem, Harrison and Muir 1995); teams from several cultural backgrounds with CQ as a moderator has a negative influence on team cohesion, process, performance, and outcomes (Yousoufpourfard 2010). So, CQ should not be considered as an external factor on the organisation (employees, management, and experts) as such consideration and accepting of not being open to cultural differences and needs are causing a depreciation in the emergence of innovation in the public sector.

On the other hand, Many scholars supported the mediator effect of CQ as a positive influence on the individual, group, organisational, and internal and external environments. High CQ would increase work experience and work adjustment (Moon et al. 2012), innovative work behaviour (Korzilius, Bücker and Beerlage 2017), job performance (Sri et al. 2012), leadership under the international context (Kim and Va Dyne 2011), multicultural leadership effectiveness, (Musamali and Martin 2016), effective leadership (Rockstuhl et al. 2011), and individuals to excel in a multicultural working environment (Remhof, Gunkel and Schlaegel 2014).

When CQ acted as a mediator in this research context, the mediation effect was robust and positive at all micro and macro levels. For Innovation Human Drivers, CQ positively mediated the IHD (EE, LMS, and BIP) at both micro and macro levels, which means that the increase in the IHD will lead to an increase in the Emergence of Innovation Outcomes. Also, Innovation System Drivers ISD (OB and ER) were positively mediated by CQ at both micro and macro levels, which means that the increase in the ISD will lead to an increase in the Emergence of Innovation Outcomes. Furthermore, Emergence of Innovation Drivers EID the whole of (IHD and ISD) were positively mediated by CQ at both micro and macro levels, which means that the increase in the EID will lead to an increase in the Emergence of Innovation Outcomes. These distinctive results are leveraging on embedding the concept of CQ in the (individual, group, organisation, and environment) as a success factor that leading to increasing the opportunities of innovation to emerge in the public sector higher education service providers.

In summary, CQ is an intercultural quotient were individuals effectively adapt, interact, perform, and lead in a multicultural context (Earley and Ang 2003), (Ang and Inkpen 2008) and (Gunkel, Schlaegel and Taras 2016). A higher level of CQ would support in enhancing the opportunities for an individual to become more successful in cross-cultural interactions (Thomas et al. 2015). As we are working in an open and connected world, CQ is playing a significant role in an individual's performance, decision-making, and cross-cultural interaction (Chen, Liu and Portnoy 2012), and at the same time, CQ is facilitating for organisations to successfully adapt, communicate, and coordinate in a diverse setting (Johnson, Lenartowicz and Apud 2006). Hence, CQ should be part of the organisation behaviour, leadership, line managers, and employees towards creating a cohesion working environment that adopts innovation to produce the targeted outcomes.

Taking this into consideration and linking it to these research findings, CQ in this research has a dual effect on the Emergence of Innovation Drivers predicting the Emergence of Innovation Outcomes in the public sector higher education service providers. The first effect of CQ when acted as a moderator; it has a negative or passive influence on EID predicting EIO as an external factor. Such a decrease is not in favour of enhancing the opportunities for the emergence of innovation outcomes in the public sector higher education service providers. The second effect of CQ when acted as a mediator that showed a significant positive influence on EID predicting EIO. This positive influence is caused by considering CQ as the bridge that connecting individuals, group, organisation, and the environment in a cohesive way that led to enhance the emergence of innovation outcomes in the public sector. This conclusion is answering question 5, and hence, H4 is accepted for both findings as follows: CQ as a moderator acts as a negative or passive influence at the micro and macro levels of EID predicting EIO, and at the same time, CQ as a mediator acts as a positive influencer at the micro and macro levels of EID predicting EIO.

8.8. Summary of Discussion

This discussion chapter has provided an overview of the research objective, discussed and interpreted research key findings with alignment and comparison with the literature review related theories, findings, and conclusions. The discussion was guided by the research questions in the way to answer them, in addition, to test and validate research hypotheses. There are four main sections in this chapter to discuss the data analysis; the first one provided an overview of this research objective and proposed an Innovation Ecosystem InE for Public Sector Higher Education Service

Providers. The second section discussed the descriptive statistics for the factor from research independent and dependent variables supported by relevant literature review. The third section discussed the findings of the correlation tests validated the research hypotheses and compared the results with the literature review, followed by a summary for the associations conclusions. The fourth section discussed the findings of the regression tests and compared the results with the literature review, followed by a summary of the regression conclusions. Below Table (75) provides a summary of the testing results.

Research Questions	Research Hypotheses	Hypotheses Accepted / Rejected
Q2: How does Innovation Human Drivers (Employee Empowerment, Line Manager Support, Board of Innovation Provision) influence the Emergence of Innovation Outcomes in the public sector service providers?	H1: The Innovation Human Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Service Providers.	Accepted Positive influence
Q3: How does Innovation System Drivers (Organisation Behaviour, and Environment Readiness) influence the Emergence of Innovation Outcomes in the public sector service providers?	H2: The Innovation System Drivers would associate with the Emergence of Innovation Outcomes in the Public Sector Service Providers.	Accepted Positive influence
Q4: How does the Emergence of Innovation Drivers influence the Emergence of Innovation Outcomes in the public sector service providers?	H3: Emergence of Innovation Drivers would associate with the Emergence of Innovation outcomes in the Public Sector Service Providers.	Accepted Positive influence
Q5: How does cultural intelligence impact the Emergence of Innovation Drivers to influence the emergence of innovation outcomes in the public sector service providers?	H4: Cultural Intelligence would influence the association between Emergence of Innovation Drivers and Emergence of Innovation Outcomes in the Public Sector Service Providers.	Conditionally Accepted CQ as a moderator has the following: Significant negative influence EE, OB, ISD, and EIO 1- Not Significant

		LMS, BIP, IHD, and ER
		Accepted CQ as a mediator Positive influence at micro and macro levels

Table (75) Testing Results

This chapter, in general, has concluded that employee empowerment with cultural intelligence has a positive influence on the emergence of innovation in the public sector higher education service providers within the defined Innovation Ecosystem when CQ is embedded as a mediator. On the other hand, employee empowerment would have a negative influence on the emergence of innovation in the public sector higher education service providers when CQ is moderating this relationship as an external factor. Next chapter, the Conclusion, will provide more insights on this unique finding and the other emerging findings.

9. CHAPTER NINE: CONCLUSIONS AND FUTURE RESEARCH RECOMMENDATIONS

9.1. Introduction

The accomplishment of the research objectives, along with the main conclusions, are presented in this chapter. Also, the resulting key implications from this research have been consolidated and presented in the research focus areas. Furthermore, the robustness of the research methodology is explained, and the research methods followed addressed. Moreover, this research contribution to the body of knowledge was presented, and the value of this research was highlighted. Finally, research limitations that are considered as opportunities were stated in addition to identifying prospects for future research areas.

9.2. The Accomplishment of Research Objectives

Derived from the fact that innovation in the public sector has departed from its adolescence and became the pursued vibrant type of management, and taking into consideration the needs to leverage on the rapid transformations of the global economies. There is a need to reinvent the public sector to overcome the local and global impact of the fourth industrial revolution that is compelling alterations on the lifespan of businesses and related legislation in both the public and private sector that might make them obsolete in no time. Also, the multicultural working environments become the norm in the day-to-day local and international businesses, which require high cultural intelligence level from the public organisations to effectively perform and achieve their targets. In

response to these growing challenges, there will always be a need to update, upgrade, or transform the public sector service providers to become a more responsive contributor to the whole country growth.

In response to the above-mentioned needs and challenges, the below mentioned research objectives accomplishment provides insights to the research proposed solutions.

9.2.1. To Identify the Notions of Employee Empowerment, Cultural Intelligence, and Innovation in the Public Sector Context and Extract Their Measurements Accordingly

Zimmerman (2000) Empowerment Model of Process and Outcomes identified three levels for empowerment” individual, organisational and community. This model was adopted by many scholars like Uzunbacak (2015), who build an empowerment model evolved from Zimmerman (2000). Uzunbacak introduced new three-level for empowerment: Psychological Empowerment (SE) related to individuals, Behavioural Empowerment (BE) related to managers and leaders, and the integrated Social and Structural Empowerment (SSE) that is related to the organisational internal and external management style, strategies, sharing authority and communication. These models were generally built in the private sector context, and as recommended by (Kay and Goldspink 2013) to bring the lessons learned from the private sector and appropriately embed them within the higher education service providers within public sector context. Accordingly, such lessons will be integrated into this research as will be provided in the next paragraphs.

This research adopted Uzunbacak (2015) model and transformed it into a two-level model of Innovation Human Drivers (IHD) and Innovation System Drivers (ISD) to serve the public sector higher education service providers context and this research approach. Employee Empowerment was successfully brought to the public sector context as part of IHD through main relevant factors as follows: autonomy in managing job, influence on decision making and process implementation, access to resources, customers, peers, two way communication with senior management, training, career progression, and time to adopt and implement innovation. Ten questions were developed to measure the employee empowerment in the public sector higher education service providers.

Cultural intelligence is a notion that used to measure individual performance in multicultural settings (Earley 2002). According to Ott and Michailova (2016) empirical research, there are two main conceptualisations of CQ: The first CQ model of four facets was developed by Earley and Ang (2003) with its scale CQS, and the second one with three facets conceptualisations was developed by Thomas et al. (2008) with its Short Form Cultural Intelligence (SFCQ). Bucker et al. (2015) build a model that evolved from Earley and Ang (2003) with two integrated facets ICK intelligence (cognitive and metacognitive) and ECF intelligence (motivational and behavioural) along with twelve questions to measure the CQ. In this research, Bucker et al. (2015) model was mapped to the public sector higher education service providers context that led to developing an integrated one notion consists of (seek and integrate experiences that broaden understanding of the culture of others to discuss and adopt innovative ideas, incorporate diverse legal and economic perspectives when working with other in innovation, have awareness of the cultural values and religious beliefs that encourages developing new ideas, Initiate, engage, develop, and values interactions with the culture of others, ability to deal with the stresses caused by adjusting to a new

culture, using communication and behavioural techniques that support to excel in multicultural situations and interactions with seven questions to measure CQ.

Public sector innovation has witness evolution in the research and publications, as argued by many scholars and practitioners (Osborne and Brown 2011). Also, Public sector Innovation outcomes including higher education have been summarised by (De Vries et al. 2016) through their systematic review to increase customer satisfaction, tackling social problems, involve citizens, involve the private sector, safety, fairness, increase effectiveness, and increase efficiency. Also, innovation in the public sector is influenced mainly by the environment (Osborne and Brown 2011), organization size, personnel, and ICT facilities (Bhatti et al. 2011), innovation characteristics (Damanpour and Schneider 2009), and individual empowerment (De Vries et al. 2016). In this research, the emergence of innovation notion was brought to innovation in the public sector higher education service providers as a bottom-up effect that could be measured through innovation ecosystem that produces the outcomes in the public sector higher education service providers. This integration and alignment led to developing an integrated facet for the Emergence of Innovation in the public sector (Product, Services, Customer Satisfaction, Effectiveness, Efficiency) with seventeen questions to measure EIO.

9.2.2. To Identify the Innovation Drivers That Create an Ecosystem for Facilitating the Emergence of Innovation Within the Public Sector Service Providers.

Building on Zimmerman (2000) and Uzunbacak (2015) Empowerment models as provided in the previous point, a two-level model of Innovation Human Drivers (IHD) and Innovation

System Drivers (ISD) were developed in the public sector higher education service providers setting. IHD consists of (Employee Empowerment, Line Manager Support, Board of Innovation Provision). Employee Empowerment was presented in the previous point, and Line Managers support were developed in the public sector context with the main factors (encourage new ideas, allocate resources, accept failure as opportunity, support working without fear if mistakes are committed, appreciating multicultural settings, authority delegation to subordinates to practice the job, involvement in decision making in addition to process development and implementation, two-way professional communication, support performance through development plan). This facet came with six questions to measure LMS.

Board of Innovation Provision that was constructed in this research could be defined in line with the definition of (Anderson et al. 2014) as an interdisciplinary team of experts forming an innovation task force to support innovation adoption and implementation. BIP is one of the factors that were successfully brought to this research to support creating an innovation ecosystem within the public sector higher education service providers where BIP support innovation through (sharing experience from several fields, aligning the innovation with the government rules and regulations, aligning the innovation with the community beliefs and core values, using organisational capabilities to facilitate innovation development and implementation, utilizes their understanding of the market needs to support innovation generation and implementation, utilizes their understanding of customer needs to support innovation generation and implementation towards customer satisfaction). This facet came with six questions to measure BIP.

On the other hand, Innovation System Drivers consists of (Organisation Behaviour (OB) and Environment Readiness (ER). Organisations are considered the hosting environment that supports innovation incubation and implementation (Popa et al. 2010). OB factors focus on (encourages teamwork, implement new ideas, delegates authority to implement innovative ideas, decisions are made in consultation with the employees, facilitates open communication channels, allocate resources that supports and encourages new ideas, vision and mission encourage innovation, plans to put new ideas into practice, consider innovative practices during performance appraisal, removes barriers that hinder innovation, open to adopting innovation and change to meet technology revolution and market needs, rewards achievements and appreciates success). This facet came with eleven questions to measure OB.

Environment Readiness (ER) is tackling the internal (organisation) and external (society) aspects that support or hinder innovation. Innovation requires an organisation to be developed (Rogers 2003), government to be regulated (Barry 2012), and a market for consumption (Christensen 1997). ER would support innovation through the following factors (rules and regulations to facilitate innovation adoption and implementation, creating working environment that is the right environment for innovation to emerge and implement, having customers open to new ideas and willing to accept change, customers participation in developing our services or products, having a market that is a competitive environment and encouraging to generate and produce innovative solutions, having customer needs that are dynamic and subject to change which requires continuous innovation). This facet came with six questions to measure ER.

A global dimension, namely the Emergence of Innovation Drivers, was developed as an integration of IHD and ISD to create a macro level for innovation drivers. Also, CQ was brought to this system as moderator and mediator to influence the established unidirectional relationships between Emergence of Innovation Drivers and Emergence of Innovation Outcomes that together form the proposed Innovation Ecosystem InE for Public Sector Higher Education Service Providers. This InE is presented in this research conceptual framework. This InE is assumed to support the public sector higher education service providers to become more innovative and more responsive to uncertainty caused by market and society dynamic needs and expectations.

9.2.3. To Find the Associations Between the Emergence of Innovation Drivers and Emergence of Innovation Outcomes with the Influence of Cultural Intelligence Within the Public Sector Service Providers.

Research into public sector innovation has witness evolution in many areas (Osborne and Brown 2011) that encourage to further the investigation in theoretical, multi-methods, cultural, and governance perspectives (De Vries et al. 2016). Also, the multicultural working environments and communities require to further the research in managing relationships to determine the required capabilities and skills to lead the success, in addition to how CQ is contributing to the organisational performance (Awan and Kraslawski 2017). Based on the literature review, this research developed a conceptual framework for innovation drivers and outcomes within the public sector higher education service providers. In doing so, many hypotheses were created to unidirectional link the variables via causal effects, causal antecedent, and proven relationships that received empirical support. By implementing the research methodology on the developed instrument and testing the

collated data, the relationships between the Emergence of innovation drivers and the Emergence of Innovation outcomes were significantly associated at both micro and macro levels.

The emerging findings from the proven associations were promising and supported the assumption on the significance of the proposed Innovation Ecosystem to serve the public sector in general and more particular higher education service providers. It is worth to mention here that the proposed Public Sector Innovation System has agents at the micro level that been successfully integrated into this InE to create a whole at the macro level supporting innovation. These agents are and not limited to a creative idea with the possibility of execution, time for adoption, empowered individuals, collaborative management to support and allocate resources, experts from several fields to provide innovation provision, CQ for engagement, hosting organisation for development, technology for development and implementation, a market for execution and measurement, a community for regulation and consumption. Need and Purpose at the individual, group, organisation, or community level is considered as the spark that ignites InE innovation engine to produce the required and desired innovation outcomes in the public sector higher education service providers.

9.2.4. To Conduct a Survey Among Public Sector Higher Education Service Providers and Analyse The Data Via Several Statistical Techniques.

This research adopted positivistic philosophy, methodology, deductive (confirmatory) research design, techniques and procedure, and quantitative method that all been supported by the literature has led to successfully developing the questionnaire as a research instrument to generate

quantitative data for further investigation, answering research questions, and validate research hypotheses. Selecting higher education from the public sector to implement the survey came from the fact that higher education which is managed by the government is no different from other public sector service providers that are funded by the government (Ferlie, Musselin and Andresani 2008). Also, this research is focusing on the innovation outcomes (process, product, service, customer satisfaction, effectiveness, and efficiency) from a conceptual perspective where all public service providers have commonalities with respect to each organisational differences. Furthermore, public sector organisations, in general, have high percentages of similar nationalities that are somehow not supporting the sample diversification to include several nationalities from several backgrounds. Finally, higher education, in general, is considered research-based with merit in addition to the fact that it is a multicultural environment, which adds value to make this research more legitimate. This understanding led to increasing the confidence in considering higher education for survey implementation, which were fruitful through providing reliable responses that contributed to this research objective and outcomes.

In the data analysis chapter, several statistical techniques using SPSS (descriptive analysis, reliability, normality, correlation, and regression) were used to validate the questionnaire response towards reliability and completeness in the way to further the investigation to answer the research questions, validate the research hypotheses, and ground the floor for generalising of the founded results.

9.2.5. To Report the Finding and Confirm the Research Hypotheses.

In response to the research problem statement and research gap, this research aims to investigate the influence of employee empowerment and cultural intelligence on the emergence of innovation in the public sector in the way to create an innovation ecosystem for the public sector higher education service providers to become more innovative. In doing so, research questions been created to guide this research toward achieving the required and desired outcome with a room for emerging findings and conclusions. Also, four main hypotheses were developed based on the literature review along with several subdivided hypotheses to establish associations between research identified variables (the Emergence of Innovation Drivers (EID), CQ, the Emergence of Innovation Outcomes (EIO)) that eventually led to developing the conceptual research framework.

The first three hypotheses were tested and accepted based on the emerging relationships that provided evidence to confirm the associations between the defined variables, which means that an increase in the emergence of innovation drivers will lead to an increase in the emergence of innovation (outcomes) in the public sector higher education service providers. For hypothesis four, it was accepted under the following defined conditions: when CQ acted as a mediator that resulted in creating a positive influence on EID predicting EIO, and when CQ acted as a moderator that resulted in creating a negative influence on EID predicting EIO. These significant findings showed the positive association between empowerment, cultural intelligence, and emergence of innovation outcomes at the individual, group, organisational, and community levels in public sector higher education providers. Also, these findings are supporting the construction efficiency for the proposed Innovation Ecosystem at this stage, with recommendations to further the research in this

area as it is early to generalise this finding. However, this hesitation is not taking from the value of these unique conclusions.

9.2.6. To propose strategies that could be used to support the public sector higher education service providers to become more responsive to market needs and technology transformations

Through the proposed innovation ecosystem InE, empowered employees with high CQ might help the public sector higher education providers to become more innovative and responsive to the market and technology needs and expectations. More information is provided in section 9.4. Implications.

9.3. Robustness of the Research Methodology

This research methodology has been presented and discussed in chapter six from this research. The quantitative research approach was adopted as there were recommendations from the literature to invest in this approach, in addition to the fact that this research is incorporating complex phenomena like the empowerment, emergence of innovation and cultural intelligence in the public sector higher education service providers context. Also, this research aims to generalise the findings through its followed positivism philosophy and deductive approach, taking into consideration the need of having a sample from several backgrounds within a particular public sector, that was facilitated by the quantitative approach that targets wider audiences rather than

other approaches in addition to less researcher interaction. Furthermore, another motive to develop the research methodology was consequential from the nature of the research problem and the district research questions. Finally, the research methodology was developed to accommodate the needs and requirements, as mentioned earlier.

This research methodology was developed based on the intensive literature review to investigate the presumed unidirectional connections for the research variables that been evolved from relevant models with empirical support from the literature. Also, these unidirectional links been constructed with the aim to synthesise the relationships between the variables in the research conceptual framework. Based on that, a questionnaire was developed as the primary research instrument and became the source to collate data that will be tested to answer the research questions and validate the research hypotheses. The questionnaire validity was enhanced and ensured through a validation process via a pilot study that took place with experienced researchers in addition to the consultation of one of the universities institutional research department that led to present the questionnaire in its last version that was used in this research.

Public sector higher education service providers in the United Arab Emirates was selected to conduct this questionnaire. By using one of the online famous survey engines, the questionnaire along with a cover letter was transformed into a digital version, and its link was shared via emails to the targeted higher education providers mainly to the research departments. The Simple Random Sampling (SRS) method was followed in this research to conduct this questionnaire (Thompson 2013) to overcome the challenges related to difficulties and lengthy processes in accessing some organisation in addition challenges to get information on the actual employee's numbers. Also, SRS

is considered as an unbiased tool that provides equal opportunities with a level of freedom for participants to participate and exit anytime, which may encourage them to participate.

In order to prepare the responses for further investigation, the measuring scale and the collated data completeness, validity, and consistency were confirmed by using SPSS that resulted in accepting 162 out of 217 responses. Based on the accepted responses, the demographics assured that the targeted sample is representing the public sector higher education service providers well, which indicated a successful adoption to the SRS method. The investigation was furthered on the collated and selected data using descriptive statistics to present the variation in the responses. Also, the reliability test followed by a normality test took place that confirmed the instrument had captured a high level of consistency via Cronbach Alpha test (Fiels 2009), and the data are following a normal distribution with an accepted level of the skewness and kurtosis (Doane and Seward 2011).

The constructed unidirectional relationships were tested using correlation test that resulted in confirming the significant positive association between the emergence of innovation drivers, CQ, and the emergence of innovation outcome at both micro and macro levels. Finally, the regression test took place to investigate the direct relations between the independent variable predicting the dependent variable, and then, the investigation was furthered by using CQ moderator and mediator effect on predictions between independent and dependent variable. The used methodology has led to confirm the relationships between this research constructed variable and build a basis for discussion and conclusions for the results and emerging findings.

9.4. Implications

In this research, the aim is to investigate the influence of employee empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers. Throughout the research, the empowerment, cultural intelligence and emergence of innovation were explored at individual, group, organisation, and community levels and then, been carefully linked to the public sector higher education settings. Also, the relationships between the emergence of innovation drivers (human and system), CQ, and the emergence of innovation outcomes were assessed and validated at micro and macro levels. Furthermore, this research proposed and tested associations between the defined constructs led to answer the research questions and validate the research hypotheses. This approach has contributed to constructing a proposed Innovation Ecosystem (InE) for the public sector higher education service providers that were supported by these research findings in addition to the related literature. The richness of this research findings and conclusions suggests the following implication to enhancing the opportunities for the emergence of innovation in the public sector higher education service providers:

9.4.1. Employee Empowerment

- To empower employees towards enhancing their performance and satisfaction in the way to fostering innovation adoption and implementation; this research recommends to empower employees to become innovation champions who support innovation adoption and fostering innovation culture within the organisation.

- To create empowerment culture within the organisation; this research recommends to leverage on the public sector resources to empower employees with a focus on providing them with autonomy in managing job, influence on decision making and process implementation, access to resources, access to the customers, access to peers, two way communication with senior management, access to training, career progression, and time to adopt and implement innovation.

9.4.2. Line Manager Support

- To increase the leadership behaviour in supporting innovation; this research recommends public sector managers to play a situational leadership style (sponsor and supervisor) and accept innovation risk as an opportunity to nurture innovation culture within the organisation. Also, managers should be able to perform professionally in a multicultural situation to benefit from national and international experiences through supporting team cohesiveness and cultivating their knowledge to produce innovation required outcomes. In addition, they should encourage new ideas, involve their subordinates in decision making and process implementation, and maintain two-way professional communication
- To empower employees through resource allocation; this research recommends managers in the public sector higher education service providers to determine the appropriate empowerment level and resource allocation to support innovation with best resources optimisation.

9.4.3. Board of Innovation Provision

- To support the emergence and success of innovation; this research recommends the BIP to support the emergence of innovation in the public sector higher education service providers through:
 - Work cohesively and share experience from several fields to increase the emergence of innovation opportunities
 - Utilise their understanding of the market needs to support innovation generation and implementation
- To support innovation generation and implementation; this research recommends BIP to support innovation generation and implementation in the public sector higher education service providers through:
 - Align the innovation product/service with the government rules and regulations to ensure innovation success
 - Aligning the innovation product/service with the community beliefs and core values to ensure suitability and adoption
 - Leverage on the organisational capabilities to facilitate innovation development and implementation
 - Utilise their understanding of customer needs to support innovation generation and implementation towards customer satisfaction

9.4.4. Organisation Behaviour

- To become the right environment for innovation to emerge; this research recommends the public sector higher education service providers to transform their management style to create an innovation culture within their organisation. This change in the management style is recommended to renovate them to become an empowering and empowered organisation, which eventually lead to improving the emergence of innovation opportunities towards maintaining a competitive advantage. Hence the public sector higher education service providers organisations should consider the following:
 - encourages teamwork
 - adopt new ideas
 - delegates authority to implement innovative ideas
 - ensure decisions are made in consultation with the employees
 - facilitates open communication channels
 - allocate resources that supports and encourages new ideas
 - adopt a vision and mission that encourage innovation
 - create and implement strategic plans, projects, and programmes to put new ideas into practice
 - ensure the consideration of innovative practices during performance appraisal
 - remove barriers that hinder innovation
 - become open to adopting innovation and change to meet the technology revolution and market needs
 - rewards achievements and appreciates success

9.4.5. Environment Readiness

- To nurture innovation to become the community norm; this research recommends decision-makers to develop rules and regulations to facilitate innovation adoption and implementation at the individual, group, organisational, and community levels taking into consideration the social welfare. Also, there should be an interaction between the Triple Helix (Government, Education, and Industry) to foster innovation culture and establish competitive environments that encourage to generate and produce innovative solutions. Furthermore, the organisation should encourage adopting policies that increase customers' participation in developing the offered services or products. Finally, there should be a level of understanding and acceptance to change at organisational and individual levels through perceiving innovation risk as an opportunity for development.

9.4.6. Cultural Intelligence

- To foster innovation in multicultural working environments at the individual, group, organisational, and community levels; this research recommends those who are working in the public sector higher education service providers from all levels to increase their CQ. It is proven that high CQ would increase the cross-cultural leadership, enhance performance and effectiveness, support adjustment, openness and extraversion, and innovation adoption. Nowadays, the whole world is connected, and the working environments are multicultural, which requires a new breed of employees and managers who possess the knowledge, skills,

and competencies with high CQ to function effectively in such environments and adopt innovation towards success.

9.5. Contribution to the Body of Knowledge

Public sector higher education service providers are evolving with the influence of the fourth industrial revolution and emerging markets that require to graduate a new breed of students who are ready-to-work and possessing the employability skills, 21st-century skills, and multi-technical competences. This type of dynamic demand created a challenge for the public sector higher education service providers to encounter the current and future needs that are creating a critical level of uncertainty on what strategy should be adapted to produce the required and desired outcomes. This challenge was the motive in this research to come with a proposition that might support the emergence of innovation in the public sector higher education service providers in the way to produce innovative solutions and meet current and future needs.

In the course of reviewing the literature related to innovation in general towards the public sector context, three central notions were highlighted (Employee Empowerment, Cultural Intelligence, and the Emergence of Innovation). This approach has led to developing questions and hypotheses around the research problem statement and guided the development of this research structure to investigate the influence of individual empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers. This research

exhibit significance and contributes to existing the body of knowledge through the following noteworthy points:

- Bringing the Employee Empowerment, Cultural Intelligence, and the Emergence of Innovation to the public sector higher education service providers context through successful integration to many related factors and relationships at both the micro and macro levels that led to creating significant unidirectional associations. This research demonstrated uniqueness in constructing these variables that support bridging the gap within this area at the individual, group, organisation, and community levels.
- Conceptualising an innovation ecosystem within the public sector setting through identifying and associating the factors that contribute to constructing such ecosystem system. This research adds to the body of knowledge through providing an empirical study that identifies public sector innovation human drivers and innovation system drivers and links them to the emergence of innovation outcomes along with cultural intelligence at the individual, group, organisation, and community levels.
- Introducing empirical findings that significantly contributes to the body of knowledge emerging theoretical understanding of innovation in the public sector higher education service providers in a new approach.
- Extending the knowledge of innovation in the public sector higher education service providers with the newly developed Innovation Ecosystem based on empirical evidence and emerging arguments on increasing the emergence of innovation outcomes through increasing the emergence of innovation drivers with CQ influence.

- Testing and confirming the influence of CQ moderator and mediator effect on the emergence of innovation drivers predicting the emergence of innovation outcomes at the micro and macro levels in the public sector higher education service providers context for individual, group, organisation, and community levels.
- Introducing practical applications at several levels on employee empowerment, line manager support, the board of innovation provision, organisation behaviour, environment readiness, and cultural intelligence.
- Serving researchers and practitioners to bridging the existing gap in the body of knowledge related to innovation in the public sector, this is besides offering a promising ground to further the study in its unique approach.

These significant research contributions are grounding theory for the Emergence of Innovation in the public sector service providers via creating an Innovation Ecosystem to support the emergence of innovation. This InE has been formed to empowering innovative employees who possess high CQ to become the core of the InE system in the way to facilitate the innovation generation and adoption. Also, this research, through its approach, is establishing a notion where the public sector higher education service providers become more responsive to the uncertainty caused by dynamic market needs through creating a working environment where innovation naturally emerge. Furthermore, in the connected multicultural world, cultural differences are playing a significant and influencing role in the way that organisations should be developed, managed, maintained, and eventually produce the required services and products. Finally, the public sector higher education service providers are recommended to have a better understanding

for the needs and culture of their employees, clients, internal, and external environments to generate solutions that meet their expectations to survive and thrive within a defined innovation ecosystem.

9.6. Limitations and Future Research Agenda

Every research has limitations; it is natural to produce limitations due to many constraints related to research design, methodology, area of interest that will not undermine the value of the research and its findings and conclusions. This research is investigating the influence of individual empowerment and cultural intelligence on the emergence of innovation in the public sector higher education service providers' context. Below research limitations are considered opportunities for further research agenda:

9.6.1. Methodological Limitations and Recommendations:

- There is a limitation caused by the lack of previous studies that are tackling this research topic with the defined and interlinked three notions; Employee Empowerment, Cultural Intelligence, the Emergence of Innovation in the Public Sector Higher Education Service Providers at the individual, group, organisation, and community levels. This research, with its significant findings and conclusions, offers the opportunity to further the investigation in this promising area.
- The sample was randomly selected from the UAE higher education service providers from the public sector. Even though UAE is a multicultural country with merit that provided

representative sample covering all required demographics, still there is a need to conduct this research in other countries to gain a broader perspective on the research topic from national and international multicultural public sector higher education service providers.

- Other services providers from the public sector service providers were excluded from this research. There is a potential to include them in future studies as there are many commonalities across public sector service providers who are governmentally funded and follow governmental rules and regulations.
- The research selected variables and their factors have been linked and constructed to follow the research design and approach. There is potential to add more enablers to the proposed innovation ecosystem to enhance the objectives and outcomes.

9.6.2. Limitations for the Researcher and Recommendations

- Limited access to data: This research is targeting higher education service providers from the public sector. There was a challenge to get information on quantities like the exact number of staff and faculty working in this sector due to some constraints that resulted in not knowing the population size in order to determine sufficient sample size. However, this research successfully adopted the Simple Random Sampling (SRS) method to overcome this limitation.
- Limited access to participants: reaching participants was through universities' research departments which limited the opportunities to their rules and availability.

- Limitation caused by survey language: This research targeted audiences from several backgrounds, and English language, in general, was not the first language for some of them. So, simple and direct English language was used to avoid distraction and misrepresentation.
- Publishing the research results: there is a limitation to publish the research results due to the nature of the public sector that require a lengthy process to grant permission that limits the ability for publishing to a certain level. However, the required permissions will be pursued as appropriate.
- Longitudinal effects: This research is part of a PhD project submitted at a specific time, which is limiting the opportunities for furthering the investigations at this stage. However, more investigations will take place after the completion of this degree as this area of research is promising and has the potential to evolve.

9.7. Summary of Conclusions

The main research conclusions were discussed in this chapter by presenting the accomplishments of the research objectives, proven the robustness of the research methodology, provide research implications, highlights this research contributes to the body of knowledge and concluded by stating the research limitations and future research agenda.

The Constructed Public Sector Innovation Ecosystem in this research had significantly increased the Emergence of Innovation Outcomes when CQ was employed as an integral part of this system. CQ as a mediator has significant influenced on the associations between the

Emergence of Innovation Drivers - EID (Employee Empowerment, Line Manager Support, Board of Innovation Provision, Organisation Behaviour, and Environment Readiness) and the Emergence of Innovation Outcomes (EIO) (Product, Process, Service, Effectiveness, Efficiency, and Customer Satisfaction) at both the micro and macro levels. EID has positively increased the EIO as CQ minimised the cultural differences when adopted as a genuine part of the system. In this case, CQ played a significant positive role in channelling the relationships between the defined innovation drivers and outcomes. However, there was a noticeable gap, or in other words, adverse relationships between EID along with EIO caused by CQ when acted as a moderator. This CQ moderator passive effect as an external influencer at micro and macro levels has caused a decrease in the Emergence of Innovation Outcomes. Hence, cultural intelligence (in internal and external environments) might foster or hinder the innovation adoption at the individual, group, organisational, and community levels towards achieving the innovation outcomes.

Despite the fact that innovation occurs purposely or coincidentally, a Public Sector Innovation Ecosystem is necessary for incubating, developing, and executing innovation towards reinventing this sector. Hence, the public sector higher education service providers will have enhanced opportunities for the emergence of innovation when the adopted InE is enabling them to become part and contributor to the innovative ecosystem led by those empowered employees who possess high CQ. Such InE would produce innovative solutions and increase the production of graduates equipped with employability skills, 21st-century skills, and technical competence to become work-ready to meeting the industry current and future needs and expectations; this is in addition to achieving many other required and desired outcomes at the entity or community levels.

Based on these research findings, the public sector higher education service providers are recommended to empower the innovative employees who possess high CQ and harness their participation in changing the working environment to producing the required and desired innovation outcomes. Also, organisation's new breed of management should play a situational leadership, enhance their CQ, and adopt innovation culture and empowering the management as an organisational norm to have a better understanding for the internal and external environment's needs and accordingly facilitate the resources to fostering innovation. Furthermore, the interdisciplinary Board of Innovation would add value to support innovation via continuing the business-as-usual nature while introducing innovative solutions and approaches with ease of interactions. Finally, public sector innovation requires an innovation ecosystem where the individuals, internal systems, and external systems are purposely associated and have a level of consensus in adopting innovation and its outcomes.

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Appendices

a. Appendix (A) Empowerment Questions

Uzunbacak (2015)

Behavioral Empowerment	
DG1	İşimi yaparken ortaya çıkan sorunla ilgili olarak, izin almaksızın müdahale etmem istenir.
DG2	Yetki alanımdaki işlerle ilgili tüm sorumluluk bana verilmiştir.
DG3	Yaptığım işlerin kontrolü aşamasında benim de bulunmam sağlanır.
DG4	Bireysel becerilerimi yaptığım işte kullanmama fırsat tanınır.
DG5	İşimle ilgili yeni metotlar denemem teşvik edilir.
DG6	Yaptığım işle ilgili alınan kararlara katılımım sağlanır.
DG7	İşi daha iyi ve kaliteli yapmaya yönelik düşünce ve fikir üretmem teşvik edilir.
DG8	İşletmeye olan güven ve saygınlığı artırıcı projeler üretilir.
DG9	Kendime olan güvenimi ve cesaretimi destekler.
DG10	İşimle ilgili karşılaştığım sorunların çözümüne destek olunur.
DG14	İşletmemin amaç ve hedefleri hakkında yeterli bilgi verilir.
DG15	İş ile ilgili olarak ihtiyaç duyduğum tüm araç ve gereç kısa sürede temin edilmeye çalışılır.
DG16	Tüm çalışanların güvenilir bir ilişki geliştirmesi için uygun ortam sağlanır.
DG17	Üst yöneticilerimle istediğim anda iletişime geçme imkanı sağlanır.
DG18	Üst yöneticilerimle olan iletişimde ani ve yapmacık yaklaşım yerine, uzun dönemli, sabırlı ve disiplinli bir yaklaşım benimsenmiştir.
DG19	Takım ruhu ile hareket etmemiz teşvik edilir.
DG11	İşimle ilgili duygu ve düşüncelerimi rahatlıkla ortaya koyma konusunda cesaretlendirilir.
DG12	Daha iyisini ve fazlasını yapabileceğim konusunda beni teşvik eder.
DG13	İşimi yaparken hata yapma korkusu taşımam.
DG20	Başarı ve başarısızlığın bireysel olmayıp, tüm kuruma yansyacağını bilerek hareket etmem yönünde motive edilirim.

DG21	İşimle ilgili anlamlı hedefler belirlememe yardımcı olunur.
DG22	İşimin gerektirdiği konularda yeterince eğitim verilir.
DG23	Bireysel ve iş yaşamımla ilgili yeni şeyler öğrenmem konusunda sürekli olarak teşvik edilir ve desteklenirim.
DG24	Ortaya çıkarılan başarılı çalışmaların kutlanması için aktiviteler yapılmasına özen gösterilir.
DG25	Yaptığım başarılı çalışmalar takdir edilir.
DG26	Sergilediğim performans hakkında bana bilgi verilir.
DG27	Yaptığım işlerle ilgili olarak ortaya koyduğum bireysel gelişim takip edilir.
Psychological Empowerment	
BG1	Yaptığım iş benim için çok önemlidir.
BG2	İşimle ilgili olarak yaptığım aktiviteler benim için özel anlam taşır.
BG3	Yaptığım iş benim için anlamlıdır.
BG4	İşimin gerektirdiği yetenekler bende mevcuttur.
BG5	İşimdeki aktiviteleri sorunsuz olarak gerçekleştirecek kapasiteye sahibim.
BG6	İşimin gerektirdiği becerilere uzmanlık seviyesinde sahibim.
BG7	İşimi nasıl yapacağım konusunda karar vermede özerkliğe sahibim.
BG8	İşimi nasıl yürüteceğime kendim başıma karar veririm.
BG9	İşimi bağımsız ve serbestçe davranabileceğim fırsata sahibim.
BG10	Çalıştığım birimdeki gelişmeler üzerinde oldukça etkiliyimdir.
BG11	Çalıştığım birimdeki olaylar ile ilgili kontrolüm oldukça fazladır.
BG12	Çalıştığım birimdeki olaylar üzerinde nüfuzum oldukça fazladır.
Social and Structural Empowerment	
SYG1	İşimi yapabilmek için astlarımdan gereken desteği görmekteyim.
SYG2	İşimi yapabilmek için üstlerimden gereken desteği görmekteyim.
SYG3	İşimi yapabilmek için iş arkadaşlarımdan gereken desteği görmekteyim.
SYG4	İşimi yapabilmek için çalışma grubumdan gereken desteği görmekteyim.
SYG5	İşletmemizde kararlar merkezi olmayan esnek bir yaklaşım benimsenerek alınır.

SYG6	İşletmemizde kararlar ilgili çalışanların katıldığı tartışma ortamında alınır.
SYG7	Kararların alınmasında astların kaygı ve fikirleri değerlendirilir.
SYG8	İşletmemizde problem çözme tekniklerinden istifade edilir.
SYG9	İşletmemizde insani ilişkilere ve takım çalışmasına önem verilir.
SYG10	İşletmemizde yetki ve hiyerarşi net olarak tanımlanmıştır.
SYG11	İşletmemizde görev tanımları net olarak yapılmıştır.
SYG12	İşletmemizin amaç ve hedefleri net olarak tanımlanmıştır.
SYG13	İşletmemizde yeni fikirleri destekleyen ve teşvik eden bir kaynak dağılımı vardır.
SYG14	İşimi yapabilmem için gereken kaynaklara rahatlıkla ulaşabilmekteyim.
SYG15	İşimi daha iyi yapmam için ilave kaynak talebinde bulunduğumda işletmem genellikle karşılar.
SYG16	İşletmemin stratejilerini, hedeflerini ve amaçlarını anlıyorum.
SYG17	İşletmemin yöneticilerinin vizyonunu anlıyorum
SYG18	İşimi daha iyi yapabilmek için stratejik bilgilere kolayca erişebiliyorum.

Table (76) Uzunbacak (2015) Empowerment Questionnaire

Translation

Behavioural Empowerment	
DG1	Regarding the problem that arises when I work, I am asked to intervene without permission.
DG2	I have been given full responsibility for the work in the jurisdiction.
DG3	My presence is ensured in the process of controlling the work I do.
DG4	I have the opportunity to use my individual skills at work.
DG5	I am encouraged to apply new methods to my work.
DG6	My contribution is assured to decisions regarding the work I do.
DG7	I am encouraged to produce new ideas for making the work better and quality.
DG8	Projects that increase my trust and prestige to my company are produced.
DG9	It supports self-confidence and courage.

DG10	I receive support to solve problems I face while doing my work.
DG14	Sufficient information is provided about the objectives and goals of my company
DG15	All the tools and equipment that I need in relation to my work are tried to be supplied in a short time.
DG16	A suitable environment is provided for all employees to develop a reliable relationship.
DG17	I have the opportunity to communicate with my line managers.
DG18	Instead of a sudden and contrived approach to communication with line managers, a long-term, patient and disciplined approach has been adopted.
DG19	We are encouraged to act with team spirit.
DG11	My job encourages me to express my feelings and thoughts about work easily.
DG12	My job encourages me that I can do better and more.
DG13	I am not afraid of making mistakes while doing my job.
DG20	I am motivated to act by knowing that success and failure are not individual but reflected to the whole institution.
DG21	My Job helps me to identify meaningful goals related to my work
DG22	There is enough training in the subjects that my work requires.
DG23	I am continuously encouraged and supported to learn new things about my personal individual and professional life.
DG24	Attention is paid to the activities to celebrate the successful work that has been produced.
DG25	Successful work that I performed is appreciated.
DG26	I am informed about my performance.
DG27	The personal development that I have made about the work I do is followed.
Psychological Empowerment	
BG1	The work I do is very important to me.
BG2	The activities I make about work have special meaning for me.
BG3	The work I make is meaningful to me.
BG4	I have the skills I need for my work.
BG5	I have the capacity to carry out the activities in my life smoothly.
BG6	I possess the level of expertise required for my work.
BG7	I have autonomy in deciding how to do my work.

BG8	I decide how to perform my work.
BG9	I have the opportunity to work independently and freely.
BG10	I have an influence on the developments in the unit I work in.
BG11	The control over the events in the unit I am working with is rather excessive.
BG12	My influence on the events in the unit I am working on is rather high.
Social and Structural Empowerment	
SYG1	I receive the support that I need from my subordinates to do my job.
SYG2	I receive the support I need from my superiors to do my job.
SYG3	I receive support from my colleagues to do my job.
SYG4	I receive the support I need from my working group to do my job.
SYG5	Decisions in my company (workplace) are made by adopting a decentralised and flexible approach.
SYG6	in my company (workplace), decisions are made in a discussion environment involving related employees.
SYG7	The anxiety and opinions of subordinates are considered in taking decisions.
SYG8	Problem-solving techniques are used in our business.
SYG9	Human relations and teamwork are important in my company (workplace).
SYG10	Authority and hierarchy are clearly defined in our business.
SYG11	Job descriptions are clearly made in our business.
SYG12	The objectives and strategies of our business are clearly defined.
SYG13	There is a resource distribution in our business that supports and encourages new ideas.
SYG14	I can easily access to the resources I need to do my work.
SYG15	My business usually meets my request for additional resources to do my job better.
SYG16	I understand strategies, goals and objectives of my job (work)
SYG17	I understand the vision of business executives
SYG18	I can easily access to strategic information to do my job better.

Table (74) Uzunbacak (2015) Empowerment Questionnaire Translation

b. Appendix (B) Cultural Intelligence Questions

Bucker et al. (2015) 12 questions adopted from Ang et al. (2007) CQS 20 questions

No	Code	Question	ICK Intelligence	ECF Intelligence
1	MC1	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	Yes	
2	MC2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	No	
3	MC3	I am conscious of the cultural knowledge I apply to crosscultural interactions.	Yes	
4	MC4	I check the accuracy of my cultural knowledge as I interact with people from different cultures.	No	
5	COG1	I know the legal and economic systems of other cultures.	Yes	
6	COG2	I know the rules (e.g., vocabulary, grammar) of other languages.	Yes	
7	COG3	I know the cultural values and religious beliefs of other cultures.	Yes	
8	COG4	I know the marriage systems of other cultures.	Yes	
9	COG5	I know the arts and crafts of other cultures.	Yes	
10	COG6	I know the rules for expressing non-verbal behaviors in other cultures.	No	
11	MOT1	I enjoy interacting with people from different cultures.		No

12	MOT2	I am confident that I can socialize with locals in a culture that is unfamiliar to me.		Yes
13	MOT3	I am sure I can deal with the stresses of adjusting to a culture that is new to me.		Yes
14	MOT4	I enjoy living in cultures that are unfamiliar to me.		No
15	MOT5	I am confident that I can get accustomed to the shopping conditions in a different culture.		No
16	BEH1	I change my verbal behavior (e.g., accent, tone) when a crosscultural interaction requires it.		No
17	BEH2	I use pause and silence differently to suit different crosscultural situations.		Yes
18	BEH3	I vary the rate of my speaking when a cross-cultural situation requires it.		Yes
19	BEH4	I change my non-verbal behavior when a cross-cultural interaction requires it.		Yes
20	BEH5	I alter my facial expressions when a cross-cultural interaction requires it.		No

Table (78) Bucker et al. (2015) CQ Questionnaire

MC = Metacognitive

COG = Cognitive

MOT = Motivational

BEH = Behavioural

c. Appendix (C) Emergence of Successful Innovation Questions

Adopted from Uzunbacak (2015) and added more questions based on the literature review.

Innovation	
YEN1	The vision of our company includes innovative elements.
YEN2	Innovative ideas are always considered in our business.
YEN3	Our company has prepared the appropriate environment for innovation.
YEN4	Our company develop appropriate plans, projects and programs to put new ideas into practice
YEN5	Our business encourages us to innovate.
YEN6	Innovative ideas and practices in our company are perceived and supported very positively.
YEN7	Our company searches, procures and assures every source needed for innovation.
YEN9	Innovative practices are taken into account during our performance appraisals
YEN8	In our business, we can always put our thoughts into practice without hesitation.
YEN10	Efforts are being made to remove organizational and managerial factors that hinder innovation in our company.
YEN11	Our company does ignore failures and rewards successes.
YEN12	A free and appropriate working environment is provided to enhance our innovation.
YEN13	Distribution of authority and responsibility to us has a positive effect on innovation.
YEN14	Senior management delegates authority and responsibility for the implementation of innovative ideas to subordinates.
YEN15	our company is open to Innovation and change
YEN16	Innovative applications in our company are treated with mutual trust.
YEN17	Our business can easily adapt to innovation.
YEN18	The performance standards of our company are improving innovation.
YEN19	Employee empowerment facilitate the emergence of innovation
YEN20	Empowered Employee with high CQ would facilitate the emergence of the innovation

YEN21	Empowered employee with high CQ will gather the innovation components at micro to generate innovation at a macro level through dynamic process
YEN22	Empowered Employee with High CQ will have a better understanding of innovation internal and external requirements.
YEN23	Empowered Employee with High CQ will have better skills and competencies to generate and manage innovation
YEN24	Empowered Employee with High CQ will bring the right internal and external experts to develop and manage innovation
YEN25	Empowered Employee with High CQ will have general understanding of the required technology to execute the innovation
YEN26	Empowered Employee with High CQ will have knowledge, skills, and competencies to utilise creative idea through innovation process
YEN27	Empowered Employee with High CQ have better understanding of facilities and restrictions of the internal (organisation) and external environments (community and market)
YEN28	Empowered Employee with High CQ has better chance to manage the time of innovation through planning and resources utilisation.

Table (79) Adopted from Uzunbacak (2015) Emergence of Innovation Questionnaire

d. Appendix (D) Questionnaire

Questionnaire Cover Letter

Dear Participant,

Thank you for agreeing to take part in this survey that focuses on empowering employees toward creating innovation environment in public sector higher education providers. This questionnaire is part of a PhD thesis, and its results will be strictly used only for this purpose. The anonymity of you and your organisation will be guaranteed. There is no right or wrong answer; it is just a matter of opinion. This questionnaire should only take 10 -15 minutes to complete.

The fourth industrial revolution with its emerging markets and technologies has highly impacted the education system. In response to such challenge, many transformation projects have taken place within the education sector to renovate the whole educational system. The higher education providers are striving to align their educational outcomes with industry dynamic needs and expectations that are always subject to change. Based on that, the aim of this is research to understand the influence of the employee empowerment and cultural intelligence on transforming the working environment within the higher education - public sector – to be the right incubator for innovation to emerge. In doing so, we are expecting the educational outcomes to be better synchronized with industry and market needs and will be able to continually graduating work-ready students who possess the required 21st-century skills.

For inquiries, please feel free to contact me or my doctor of studies on the contact details provided below. Thank you for your time and support, much appreciated.

Sincerely yours,

Morad Lutfi

PhD, Student

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This research is directed by:

Professor H. Buussabaine

British University in Dubai

Tele: 04 279 1437

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The Questionnaire

Demographics:

1	Location	<input type="checkbox"/> Al Dhafra	<input type="checkbox"/> Al Ain	<input type="checkbox"/> Abu Dhabi	<input type="checkbox"/> Dubai	<input type="checkbox"/> Sharjah	<input type="checkbox"/> Ras Al Khaimah	<input type="checkbox"/> Fujairah
2	Region/Nationality	<input type="checkbox"/> Middle East	<input type="checkbox"/> Africa	<input type="checkbox"/> Europe	<input type="checkbox"/> Asia	<input type="checkbox"/> North America	<input type="checkbox"/> Latin America	<input type="checkbox"/> Pacific

3	Position	<input type="checkbox"/> Faculty			<input type="checkbox"/> Administrative Staff		
	Faculty	<input type="checkbox"/> Engineering	<input type="checkbox"/> Health	<input type="checkbox"/> Computer Information System	<input type="checkbox"/> Applied Communication	<input type="checkbox"/> Business	<input type="checkbox"/> Education
4	Age	<input type="checkbox"/> less than 30	<input type="checkbox"/> 30-39	<input type="checkbox"/> 40-49	<input type="checkbox"/> 50-59	<input type="checkbox"/> 60 or more	
5	Years of Experience in Higher Education	<input type="checkbox"/> less than 1	<input type="checkbox"/> from 1-3	<input type="checkbox"/> from 4-6	<input type="checkbox"/> from 7-9	<input type="checkbox"/> 10 or more	
6	Education Level	<input type="checkbox"/> PhD	<input type="checkbox"/> Master	<input type="checkbox"/> Bachelor	<input type="checkbox"/> Diploma	<input type="checkbox"/> High School	<input type="checkbox"/> Other
7	Job Level	<input type="checkbox"/> Senior Management / Director		<input type="checkbox"/> Mid Management / Dean	<input type="checkbox"/> Supervisor / Manager / programme Chair		<input type="checkbox"/> Coordinator / Lecturer
							<input type="checkbox"/> Officer / Technician
8	Marital Status	<input type="checkbox"/> Single		<input type="checkbox"/> Married	<input type="checkbox"/> Divorced		<input type="checkbox"/> Widowed

Table (80) Survey Demographics

Part 1: Emergence of Innovation – Human Drivers

1.1 Employee Empowerment

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

Employee Empowerment		Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
1	I have the autonomy in managing my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	I have the influence on decision making and process development related to my department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	I have the access to the resources I need to perform my job efficiently and develop new ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I have the access to related industry partner to exchange information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I have access to my peers to work collaboratively and share best practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I have the access to the subject matter experts in my organisation to test and develop my new ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I have the access to communicate with our senior management that facilitates two-way feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I have access to training for developing knowledge, skills, and competencies that	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	I need to perform my job and create innovative solutions					
9	I have the opportunity for career advancement within my organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	I have given time to adopt, generate, and implement innovative ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (81) Employee Empowerment

1.2 Line Manager Support

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

My line Manager		Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
1	Provides support for my new ideas through encouragement, guidance, and resources allocation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Accepts failure as an attempt for success, so I am practising my job without being afraid of doing mistakes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3	Supports multicultural working environment towards innovation generation and adoption	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Provides me with authority to practice my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Involves me in decision making, process development and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Facilitates two-way professional communication and feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Creates and implements a professional development plan to increase my performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (82) Line Manager Support

1.3 Board of Innovation Provision: A team of experts from several fields (human resources, marketing, finance, technology, subject matter experts ... etc.)

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

Innovation task force :	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
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1	supports the emergence of innovation through sharing experience from several fields	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	supports innovation success by aligning the innovation product/service with the government rules and regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Supports innovation success by aligning the innovation product/service with the community believes and core values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	supports innovation success through using organisational capabilities to facilitate innovation development and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	utilizes their understanding of the market needs to support innovation generation and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	utilizes their understanding of customer needs to support innovation generation and implementation towards customer satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (83) Board of Innovation Provision

Part 2: Emergence of Innovation – System Drivers

2.1 Organisation Behaviour

Please read each statement and rate how likely the following practices exist in your organisation. Then tick your response using the following scale:

Organisational Innovation Support		Very likely	Likely	Neutral	Unlikely	Very unlikely
1	My organisation encourages teamwork to create and implement new ideas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	My organisation delegates authority and responsibility to subordinates for the implementation of innovative ideas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	My organisation decisions are made in consultation with employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	My organisation facilitates open communication channels for two-way feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	My organisation allocate resources that supports and encourages new ideas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	My organisational vision and mission encourage innovation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7	My organisation develop appropriate plans, projects and programmes to put new ideas into practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	My organisation takes into account innovative practices during our performance appraisals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	My organisation removes organizational, structural, and managerial barriers that hinder innovation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	My organisation is open to adopting innovation and change to meet technology revolution and market needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	My organisation rewards achievements and appreciates success	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (84) Organisation Behaviour

2.2 Environment Readiness

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

Environment	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
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1	Our rules and regulations facilitate innovation adoption and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Our working environment is the right environment for innovation to emerge, develop, and implement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Our customers (students and industry partners) are open to new ideas and willing to accept change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Our customers (students and industry partners) participate in developing our services or products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Our market (higher educational providers) is a competitive environment that encourages us to generate and produce innovative solutions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Our industry partners needs are dynamic and subject to change which requires continuous innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (85) Environment Readiness

Part 3: Cultural Intelligence

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

No	Cultural Intelligence	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
1	I consistently seek and integrate experiences that broaden understanding of my own culture and the culture of others when interacting with people to discuss and adopt innovative ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	I consistently incorporate diverse legal and economic perspectives when working with other in innovation generation and implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	I am aware of the cultural values and religious beliefs that encourages developing new ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I Initiate, engage, develop, and values interactions with my own and the culture of others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5	I am able to deal with the stresses of adjusting to a culture that is new to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I vary the rate of my speaking when a cross-cultural situation requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I change my non-verbal behaviour when a cross-cultural interaction requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table (86) Cultural Intelligence

Part 4: Emergence of Innovation Outcomes

Please read each statement and rate your agreement with that statement. Then tick your response using the following scale:

No	The emergence of Innovation outcomes	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
1	Enhance the quality of the undergraduate education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Enhance Knowledge configuration and generation for strategic purposes and making informed decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3	Increase the organisational flexibility to continually adapt and implement innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Increase the organisational capabilities to turning ideas into valuable products, process, and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Increase the innovation efficiency through best resources utilization and reducing the person-hours spend on the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Increase the organisational process improvement and productivity towards students success	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Increase the efficiency of the adopted technology through continually linking it with the market emerging technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Increase effective communication for exchanging new ideas (internally & externally) and knowledge sharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Increase multicultural interactions which in return help in boosting different ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	exchange from different cultural backgrounds					
10	Enhance employee capacity for research, innovation, and critical analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Increase collaboration activities and connections with industry partners to create better training and employment opportunities for students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Advance teaching disciplines at the world frontier of emergence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Maintain and enhancing academic professional competence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Increase the process efficiency on the way to meet customers (Students and industry) dynamic needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Increase customer (students and industry) satisfaction through the offered innovative solutions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Increase the production of ready-to-work graduates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17	Increase the production of graduates equipped with employability skills, 21 st - century skills, and technical competence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Table (87) Emergence of Innovation Outcomes