PSYCHOLOGICAL CAPITAL AND INNOVATIVE BEHAVIOUR AMONG UNIVERSITY ACADEMICS IN MALAYSIA: THE MEDIATING EFFECT OF INDIVIDUAL PSYCHOLOGICAL SAFETY

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By

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ABSTRACT

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Youn Jia Xin

The present study investigated the relationship between PsyCap, individual psychological safety, and innovative behaviour among Malaysian university academics. The present study filled in the following research gaps: (a) lack of study focus on the employees' individual psychological factor on their innovative behaviour; (b) inconsistent result found on the whole PsyCap construct effect and its' each dimension's effect on innovative behaviour; (c) lack of study focus on the academics' individual psychological safety; and (d) lack of study focus on the possible mediator on the relationship between PsyCap and innovative behaviours. In addition, the COVID-19 global diseases and Industrial Revolution 4.0 in Malaysia caused a need to rethink the role of higher education institutions and the incorporation of innovative teaching. The present study adopted a quantitative and cross-sectional research design. Self-administered questionnaires were distributed to university academics in Malaysia through email in order to measure their PsyCap, individual psychological safety, and innovative behaviours. 143 effective data were collected and used in the present study by using the purposive sampling method. The multiple linear regression indicated that PsyCap positively contributed to individual psychological safety and innovative behaviours, and the individual psychological safety positively contributed to innovative behaviours, confirmed the mediating effect of individual psychological safety on PsyCap and innovative behaviours. The present study bridged the research gaps and

increased awareness of the need for Malaysian universities to accelerate their innovation pace in order to survive in the highly competitive market. The present study was also beneficial to the human resource (HR) manager in the recruiting, selecting, hiring, and training process.

Keywords: PsyCap, psychological capital, individual psychological safety, innovative behaviours

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APPROVAL SHEET

This dissertation entitled "**PSYCHOLOGICAL CAPITAL AND INNOVATIVE BEHAVIOUR AMONG UNIVERSITY ACADEMICS IN MALAYSIA: THE MEDIATING EFFECT OF INDIVIDUAL PSYCHOLOGICAL SAFETY"** was prepared by YOUN JIA XIN and submitted as partial fulfillment of the requirements for the degree of Master of of Psychology in Industrial and Organizational Psychology at Universiti Tunku Abdul Rahman.

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SUBMISSION OF DISSERTATION

It is hereby certified that Youn Jia Xin (ID No:21AAM00617) has completed this dissertation entitled "Psychological Capital and Innovative Behaviour among University Academics In Malaysia: The Mediating Effect of Individual Psychological Safety" under the supervision of Dr. Chie Qiu Ting from the Department of Psychology and Counselling, Faculty of Arts and Social Science , and Dr. T'ng Soo Ting from the Department of Psychology and Counselling, Faculty of Arts and Social Science.

I understand that University will upload softcopy of my dissertation in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

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(Youn Jia Xin)

DECLARATION

I hereby declare that the dissertation is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

Chapter 1

Introduction

1.1 Introduction

This chapter introduces the background of the study and the problem statements. From there, the research objectives, questions, and hypotheses are formulated. The significance of the study, the definition of each variable, and the theoretical and conceptual framework are also introduced in this chapter.

1.2 Background of Study

Innovative behaviours cover the processes of creating, advocating, and executing brand new ideas or services (Miron-Spektor et al., 2011). When the employees in an organisation apply their new ideas in their work processes, such as changes in the management procedure, then it can be said that the employee's innovative behaviour occurs (Wang et al., 2021). From the employees' innovative behaviours, innovation at the organisation level can happen if they make use of it in producing new products, services, and markets (Tang et al., 2019). Sameer (2018) claimed that the employee's innovative behaviours and ways to improve them should be emphasised. It is important that employees be equipped with the skills of utilising innovative ways of problem solving to tackle the emergence of different knowledge, technologies and the increasing flow of information nowadays (Sergeeva et al., 2019). Many popular organisations such as Google and Apple also strive to create a relaxed and cozy working environment to facilitate their employees' innovative behaviours (Tang et al., 2019).

Innovative behaviours are essential for an organisation to successfully implement the developmental strategy (Prokhorova et al., 2019), as well as enhance its effectiveness and sustainability for survival in the industry. In other words, the innovative behaviours that are carried out by the employees can contribute to the organisations' competitiveness (Tang et al., 2019) and facilitate their adaptation to the rapid environmental changes (Parahoo et al., 2017). Innovative behaviours also play a role in fostering economic growth, enhancing people's quality of life, and developing new directions for human flourishing (Sameer, 2018).

According to Milner and Criticos (2023), the generation of fresh ideas is not the only thing that constitutes innovative behaviours in the workplace. Thinking in a creative manner is the foundation of innovation, while innovation is the successful implementation of that creative idea (Shilling, 2006). In other words, creativity is only about the development of new ideas, while innovation includes the implementation of the new ideas into reality (Anderson et al., 2004). Furthermore, Kleysen and Street (2001) claimed that one's innovative behaviours in an organisation should include exploring new chances, creating new ideas, investigating the viability of the innovation, leading in the ideas and outcomes, as well as applying it to the job.

The present study focused on the innovative behaviours of university academics in Malaysia. The elevation of attention on accountability in higher education institutions urges university academics to enhance their teaching performance to ensure the students' effective function in the knowledge community (Klaeijsen et al., 2018). According to Feher et al. (2022), higher education institutions and university academics serve as active agents to shape

society and the labour market. The rapid development of big data and the Internet of Things (IoT), together with the outbreak of COVID-19, has caused innovative online education to gradually become a mainstream teaching method (Cui et al., 2023). Hence, the usage of innovative activities has increased and become more important in the current stage of educational development (Prokhorova et al., 2019). There are different kinds of innovation and novel services in education that are being generated, and the flexibility of the educational system is necessary in order to warrant a high level of competitiveness (Belinova et al., 2017). Therefore, academics in higher education institutions are assumed to play an active change agent role in the revolution (Feher et al., 2022).

The field of education is highlighted in this study due to its important roles and influence on society. Universities, specifically those being focused on in the present study, are one of the most widespread and important social organisations. According to Sergeeva et al. (2019), innovation in universities serves a key role in enhancing the performance and effectiveness of any other educational organisation. The improvement of education quality in universities largely depends on the innovative behaviour of the academics (Sun & Huang, 2019). There are many indicators related to a university's innovative activities in their annual efficiency appraisal (Egorov et al., 2015) in order to upgrade the educational process and quality (Prokhorova et al., 2019). A particular type of teaching performance has been given high priority, namely innovative teaching (Cao & Zhang, 2020). According to Jaskyte et al. (2009), innovative academics are someone who is willing to figure out novel and diverse ways in the teaching process. These innovative ways of teaching can help in attaining students'

interest, increasing their motivation to commit, and advocating their self-efficacy in study (Zhu et al., 2013). The innovative behaviour of academics in the present study is not limited to their innovation in teaching style. Other than educating the students with different knowledge (Wong & Chiu, 2019), academics also play roles in working for research publication, supervising undergraduates or postgraduates, reviewing curriculums, generating teaching materials (Sinniah et al., 2018), involving themselves in managerial or administration work, and many others (Han et al., 2020). Therefore, the innovation of academics was considered in light of and refers to all of these roles and aspects.

Every organisation requires employees who have positive traits to enhance their job quality and benefit from it (Kaya & Eskin Bacaksiz, 2022). Hence, the present study focused on the contribution of academics' psychological capital (PsyCap) towards their innovative behaviours. According to Luthans et al. (2007), PsyCap is the main construct of an individual's positive psychology state, specifically, it is composed of four psychological resources: hope, self-efficacy, resilience, and optimism. PsyCap is a kind of asset that best fits the positive organisational behaviours' inclusive criteria and emphasises on who people are and what they can become (Luthans et al., 2015). Employees with these four psychological resources are said to have PsyCap and are associated with better job performance outcomes (Avey et al., 2011). An employee's positive mental energy can be reflected in his or her PsyCap and this can be very valuable intangible capital for an organisation (Baron et al., 2016; Manuti & Giancaspro, 2019). People characterized by the PsyCap can have confidence in dealing with and completing difficult tasks, viewing

problems from positive sides, figuring out different ways to meet their targets, and not giving up easily when faced with failure (Luthans et al., 2007; Seligman, 1988). Positive PsyCap can help people adjust to their surroundings, manage stress, and even improve their well-being (Luthans et al., 2007), not just at work but also outside of it (Youssef- Morgan & Luthans, 2015). Over the past few decades, organisations started to pay attention to employees' PsyCap in order to optimise the human system (Luthans, 2002). If an organisation has enough knowledge and understanding about the employees' potential, the organisation's ability to mobilise its human resources can be enhanced (Hsu et al., 2014).

Hope originates from the hope theory and includes one's motivation, pathways, and goals (Snyder, 2002). Individuals with hope believed in their persistence to hit targets, were able to figure out the multiple routes for success, revised them when there was a need, and tackled different difficulties along the way (Luthans et al., 2015; Tang et al., 2019). At an organisational level, self-efficacy is defined as an employee's confidence in his or her capability to make efforts to complete challenging tasks (Kaya & Eskin Bacaksiz, 2022). According to the theory of Bandura (1977), self-efficacy influences how people feel, act, and interpret an event. Next, resilience refers to an individual's ability to rebound from difficult situations (Peng et al., 2013) such as the loss of a job, family members, or serious accidents to a normal positive state (Lee et al., 2013). Other than enduring the difficult time passively, people with high resilience will also find approaches to improve the situation (Luthans et al., 2007). People with high resiliency are always able to come back stronger after negative events (Luthans et al., 2015). Finally, optimistic people are those who tend to expect

things in a positive manner and hence are able to motivate themselves to pursue their goals (Carver & Scheier, 2002). This kind of person always holds a positive view towards their success now and in the future (Luthans et al., 2015). According to Snyder (2002), the difference between optimism and hope is that optimism focuses on expectations and adjustments in reaction to different situations, while hope is a state where an individual is motivated in a particular direction.

The present study hypothesised that employees' PsyCap (hope, self-efficacy, resilience, and optimism) can contribute to their innovative behaviours. This is because one's PsyCap not only provides positivity to the person, but in addition, it can also help fulfill the expectation of positive organisational behaviours, in this case, innovative behaviours, which play a role in the employee's development and competitiveness in the organisation (Venkatesh & Blaskovich, 2012). The four attributes (hope, self-efficacy, resilience, and optimism) interact with each other and constitute the PsyCap as a whole, they have higher resources, which can provide a significantly greater predictive effect than when taken separately (Luthans et al., 2007; Luthans & Youssef-Morgan, 2017), especially when predicting job-related outcomes (Sweetman et al., 2011). However, the present study still investigated the contribution effects of each attribute towards the academics' innovative behaviours in order to enhance the generalisability and reliability of this claim among university academics in Malaysia. This was also to provide insights on which components make the highest contribution toward innovative behaviours and should receive more attention than others when a trainer is designing a training or intervention program in order to improve one's PsyCap.

As social cognitive theory (Bandura, 1986) theorised, there is a reciprocal relationship between individuals, context, and behaviour. When considering the contribution of the academics' PsyCap level (individual aspect) towards their innovative behaviours (behaviours aspect), individual psychological safety (context-related aspect) was then taken into consideration in the present study. An individual with psychological safety is characterized by having high levels of interpersonal trust in a team (Hu et al., 2018) and it influenced one's perceptions of the job environment and how others respond to his or her risky behaviour (Carmeli & Gittell, 2009).

It is notable that individuals' differences such as gender (Atwal & Caldwell, 2005; Martinez et al., 2015), personality traits (Bateman & Crant, 1993; Detert & Burris, 2007), courage, bravery, and assertiveness level (Lyndon et al., 2012) can have an effect on their individual psychological safety level in a team (O'donovan & McAuliffe, 2020). Kahn (1990) also acknowledged the possible effects of individual differences and called for attention to investigate the influences of dispositional factors on psychological safety. Hence, the present study investigated the contribution of PsyCap to one's psychological safety.

On the other hand, since innovative behaviours always bring uncertain outcomes, they can be defined as risky behaviours (Hon & Lu, 2015; Mumtaz & Parahoo, 2019). According to Newman et al. (2017), once there is a risk, the absence of individual psychological safety can hinder the employees from unleashing innovative ideas and behaviours in their work. In other words, employees viewed the action of generating new ideas as less risky only when they felt the job environment was safe (Carmeli et al., 2014). Individual

psychological safety enables employees to perceive the workplace as a secure environment for them to develop, learn, dedicate, and perform effectively in the current fast-changing century (Edmondson & Lei, 2014). When people feel safe in a team, they are more willing to engage in riskier acts (Edmondson, 1999) and need not worry about others' reactions towards themselves (Frazier et al., 2017), and vice versa. Therefore, another hypothesis of the present study was that the academics' psychological safety may have an effect on their innovative behaviours.

The present study also investigated the mediating effect of individual psychological safety on the contribution of PsyCap towards innovative behaviours of the university academics in Malaysia. It is hypothsised that academics with a higher level of PsyCap can contribute to their higher level of individual psychological safety, especially when facing uncertainties and challenges in their role, due to their willpower to succeed and their ability to always find alternative ways to achieve goals (hope), believe that they are able to complete tasks with a minimum level of anxiety (self-efficacy), be able to cope with setbacks without much fear (resilience), and always have positive outlooks on good things happening (optimism).

All of these may influence how the academics perceive the environment and contribute to their psychological safety. Once the academics have a higher sense of individual psychological safety in their work environment, this can reduce their worries about the risk of having innovative behaviours when conducting their duties (Su et al., 2022). In other words, individual psychological safety is then able to effectively increase the academics' engagement of innovative behaviours in their works.

1.3 Problem Statement

1.3.1 Theoretical Problem Statement

Effect of PsyCap on Innovative Behaviours. There is a lack of studies examining the effect of the individual's psychological traits on innovative behaviour. Recent studies in Malaysia examined the contribution of learning organisations (Sethumadavan et al., 2020), tacit knowledge sharing (Wah et al., 2018), management practices (Rehman et al., 2021), and human resource management bundles (Teddy & Law, 2019) on enployees' innovative behaviour or organisational innovation. The majority of the studies focused on the effect of external factors on innovative behaviour. Hence, the present study intends to fill in the research gaps by investigating the contribution of academics' PsyCap and towards their innovative behaviours (RO1).

Effect of PsyCap's Dimensions on Innovative Behaviours. There are researchers who claim that PsyCap's four factors (hope, self-efficacy, resilience, and optimism) tend to work together to produce a higher-order construct that provides a significantly greater predictive effect than when taken separately (Abbas et al., 2014; Luthans et al., 2007; Sweetman et al., 2011). However, studies such as Sameer (2018) found inconsistent results, indicating that hope had the strongest contribution effect on innovative behaviours as compared to the PsyCap as a whole. Hence, the separate effect of the PsyCap's dimensions on innovative behaviours has also been included in the present study to clarify the inconsistent (RO1).

Study on Individual Psychological Safety. The psychological safety of academics and its benefits for school effectiveness have not yet been

extensively or intensively studied in educational research (Shahid & Din, 2021). Most of the studies only focused on the learners' or students' psychological safety (Ayub et al., 2022; Beigpourian et al., 2019; McClintock et al., 2022; Tu, 2021), especially under the effect of the COVID-19 pandemic (Avanesyan et al., 2022; McLeod & Gupta, 2023; Korneeva et al., 2022). Shahid and Din (2021) argued that individual psychological safety is a topic that merits investigation given that teaching and education in general depend on and benefit from the innovation of academics. This is because the roles of academics were expanding and required them to communicate more regularly, work in teams, and carry out a variety of administrative tasks with a greater level of involvement in decision-making for innovation, which largely increased the inter-personal risks (Shahid & Din, 2021).

In this situation, individual psychological safety is important because academics need to feel safe to contribute innovative ideas without fear of being criticised or receiving punishment from the working groups or leaders (Carmeli et al., 2014). Hence, the present study intended to bridge the research gap by investigating the effect of PsyCap on the individual psychological safety as well as the effect of individual psychological safety on innovative behaviours among Malaysian university academics (RO2 & RO3).

Mediating Effect of Individual Psychological Safety. Luthans et al. (2005) called for attention to investigate the possible moderators and mediators that may have an effect on the relationship between PsyCap and innovative behaviour due to the lack of existing studies on the relationship as well as other possible intervening factors (Nwanzu & Babalola, 2019; Ratinaningsih et al., 2016). Although there has been an increase in studies investigating the

contribution of PsyCap towards innovative behaviours in the past few years (Mumtaz & Parahoo, 2019; Sameer, 2018; Sun & Huang, 2019; Tang et al., 2019; Yan et al., 2020), there is a lack of studies that take psychological safety into consideration when investigating the contribution of PsyCap towards innovative behaviours.

To date, there has been only one study that focused on the mediating effect of individual psychological safety on the contribution of employees' PsyCap towards their own innovative behaviour among one public university's academics in China (Sun & Huang, 2019). On the other hand, the study of Sun and Huang (2019) was done before the COVID-19 pandemic. It is worthy to investigate innovative behaviours again since the COVID-19 pandemic has greatly encouraged the increased use of different types of technologies in many countries (Tanniru, 2021). The academics may need to count on their personal psychological resources to cope with not only the changes on the job but also their worries about the COVID-19 pandemic. All of these may influence their PsyCap, individual psychological safety, and innovative behaviours, such as preventing themselves from harmful stress (Luthans et al., 2011) and enhancing innovative behaviours (Brunetto et al., 2020). Hence, the present study investigates the mediating effect of individual psychological safety on the relationship between PsyCap and innovative behaviours among Malaysian university academics (RO4).

1.3.2 Practical Problem Statement

Outbreak of COVID-19. The COVID-19 virus disease has been announced by the World Health Organisation (WHO) as a global pandemic

starting in March 2020 (Abushamleh & Qusef, 2021). Many countries began a total lockdown as a response to break the chain of the virus, where students and academics were also required to stay at home (Zhu et al., 2020). Education institutions began to deliver classes over online platforms such as Microsoft Teams, Zoom, Google Meets, etc. to prevent the significant education loss for students due to the lockdown (Rai et al., 2020). However, there are various challenges that have to be resolved, such as distraction from family members (Rai et al., 2020), the nature of labs or practical courses (Harsha & Bai, 2020), the ways to conduct examinations (Kutluk & Gulmez, 2012), students' difficulty concentrating for long periods of time, and academics' inability to gain simultaneous feedback (Zhu et al., 2020).

In Malaysia, Naidu and Husna (2020) also concluded that private university academics faced a series of challenges when teaching online, which included students having difficulty understanding the learning content, the inability to concentrate on research publications, and inconsistent teaching quality due to the internet connection. As such, the sector of education faced a lot of challenges (Cui et al., 2023), which needed the implementation of innovative ways and policies for management (Farzad et al., 2020). This external factor caused a need to rethink the higher education institution’s role and the incorporation of innovative teaching in order to satisfy the current trend and market (Bondar et al., 2021).

The Fourth Industrial Revolution. Although most of the universities in Malaysia were fully reopened when the pandemic was proclaimed to have entered the transition to the endemic phase, the trend towards online learning is still ongoing and has been for the past few years, gaining momentum during the

COVID-19 pandemic (Chiodini, 2020). In fact, the transformation of Malaysia's economy and development has been largely affected by the fourth industrial revolution, and this situation is similar in the higher education system (Ali et al., 2019), even if without the effect of the COVID-19 pandemic. This transformation focused on techniques and competencies, which changed employees into more innovative people (Baharuddin et al., 2019). As a result, education 4.0 has also emerged, which manifests a new teaching and learning pattern (Bujang et al., 2020). The Industrial Revolution 4.0 emphasised the Internet of Things (IoT), which improved business and even every field of life, including education (Romy et al., 2020). Academics at this stage of development are necessary to have creative ways to achieve innovation in education and bring future learning to a higher level (Shahroom & Hussin, 2018).

The Focus on Education Sector and Academics. The present study focused on the field of higher education institutions, which play a vital role in the country's competitiveness on the global stage and the development of its economy (Lyn & Muthuveloo, 2021). Academic staff were chosen as the participants of the present study as they are crucial agents in empowering the development of the next generation (Tsogtsaikhan et al., 2023), and their abilities are one of the priorities to be enhanced in order to increase the educational contribution towards a more sustainable world (UNESCO, 2020). This was to produce students who are able to come out with high-quality products to increase their competitiveness in the world of globalisation.

In addition, the present study focused not only on public universities but also included private universities since both types of universities are important

to produce future leaders and to lead the nation's direction (Kamarudin et al., 2023). The focus on innovation in both types of universities was also aligned with the Malaysian Education Blueprint 2015–2025, which was dedicated to actively seeking technologies and innovation in education as the main driver of the country's economic growth (Ministry of Higher Education, 2015).

Enhance Competitiveness. Technology improvements are making it more difficult for businesses to compete, which leads to duplication of their products and technologies (Tang et al., 2019). Therefore, all organisations, including universities, must consider approaches to enhance their employees' innovative behaviour to ensure the organisations' long-term survival and competitiveness. Although Yin et al. (2017) pointed out the issue that it may be difficult to urge lecturers to take initiative in adopting innovative approaches in their teaching processes as they have to tackle the high research performance demands, the requirement has now become inevitable as the global trend is forcing all educators to do so in order to enhance the universities' long-term benefits. Higher education institutions are then no longer just a place for knowledge diffusion; instead, they have become a space for innovation as well as the generation of new forms of knowledge (Grandisoli & Jacobi, 2020). To secure the students' learning results in the face of these difficulties and changes, academics must innovate (Kutluk & Gulmez, 2012). To address both the endemic and the revolution, innovative methods for active learning, grading, and record-keeping must be devised (Rai et al., 2020). The education sector needs to implement and adapt innovative methods of teaching in accordance with the fast development of technologies today (Romy et al., 2020). In short,

innovative behaviours and multi-skilled academics are vital to enable a university to keep moving into the Industrial Revolution 4.0 era (Ali et al., 2019).

Effectiveness of Training. The present study further investigated the separate contribution effects of the four factors (hope, self-efficacy, resilience, and optimism) other than only PsyCap as a whole construct towards innovative behaviours. This is to provide insights into which components contribute the most to innovative behaviours and should be given more attention than others when designing a training programme to improve one's PsyCap. The study by Dimino et al. (2020) provides a detailed example of how one's PsyCap can be improved. From the study, it is noteworthy that the four PsyCap components were improved by independent activities. In other words, if the present study had determined which factor contributed most to the outcomes, more time and efforts could have been devoted to the particular factor-related improvement activity as compared to the others. As such, the present study investigated which construct of PsyCap provided the greatest contribution effect to academics' innovative behaviours in Malaysia when taken separately.

1.4 Research Objectives

1. To examine the direct effect of PsyCap and its' each dimension (hope, self-efficacy, resilience, and optimism) on innovative behaviour among Malaysian university academics.
2. To examine the direct effect of PsyCap on individual psychological safety among Malaysian university academics.
3. To examine the direct effect of individual psychological safety on innovative behaviour among Malaysian university academics.

4. To examine the mediating effect of individual psychological safety on the association between PsyCap and innovative behaviours among Malaysian university academics.

1.5 Research Questions

1. Does PsyCap and its' each dimension positively contribute to the innovative behaviour among Malaysian university academics?
2. Does PsyCap positively contribute to the individual psychological safety among Malaysian university academics?
3. Does individual psychological safety positively contribute to innovative behaviour among Malaysian university academics?
4. Does individual psychological safety mediate the contribution of PsyCap towards innovative behaviour among Malaysian university academics?

1.6 Research Hypotheses

H1 PsyCap significantly and positively contributes to the innovative behaviour among Malaysian university academics.

H1a Hope significantly and positively contributes to the innovative behaviour among Malaysian university academics.

H1b Self-efficacy significantly and positively contributes to the innovative behaviour among Malaysian university academics.

H1c Resilience significantly and positively contributes to the innovative behaviour among Malaysian university academics.

H1d Optimism significantly and positively contributes to the innovative behaviour among Malaysian university academics.

H2 PsyCap significantly and positively contributes to the individual psychological safety among Malaysian university academics.

H3 Individual psychological safety significantly and positively contributes to innovative behaviour among Malaysian university academics.

H4 Individual psychological safety significantly mediates the association between PsyCap and innovative behaviour among Malaysian university academics.

1.7 Theoretical Framework

The theory used in the present study was social cognitive theory by Bandura (1986), which provides psychological explanation for the starting and continuation of people's behaviours (Almuqrin & Mutambik, 2021). In the theory, there are three factors that are reciprocal and interactive with one another. The factors in this triadic relationship include the individual, environment, and behaviours (Bandura, 1986). It is suggested when an individual performs certain behaviours in response to different needs of tasks, the behaviours are highly related to the personal intrinsic factors and environmental factors. In other words, the behaviours that an individual finally performed were the result of the interaction between individual factors and environmental factors.

The individual factors can be one's feelings, biological traits, and perceptions that may have a potential effect on the probability of taking the action (Bandura, 2001). One's knowledge, experiences, and psychological state can also be included as individual factors that interplay with the external

environment and determine the outcome behaviours (Wu et al., 2021). On the other hand, the external environment factors can include culture, political influences (Santos, 2020), family, social networks, a job, planned activities, or accidents, and these in turn interact with the personal factors to contribute to one's behaviours (Almuqrin & Mutambik, 2021). Similarly, because the model is not a linear approach, behaviours may also play a role in determining one's personal factors and external environment factors.

As the social cognitive theory proposed, the starting and continuation of people's behaviours were determined by the reciprocal and interactive relationship between individuals, their environment, and their behaviours. The present paper proposed that PsyCap, as a personal psychological resource, was one of the individual-level factors that may have an effect on academics' behaviours. However, the investigation of the relationship between the academics' PsyCap and innovative behaviours has to include the environment-related variables so that the triadic relationship can be established. As a result, psychological safety was introduced as an environment-related variable with the potential to mediate the relationship for two reasons.

Firstly, individual psychological safety was defined as a group member feeling safe enough to take a risk without worrying about negative consequences (Edmondson, 1999). By using the social cognitive theory (Bandura, 1986) as a lens to understand one's behaviours, psychological safety plays a role as one of the environment-related factors in the triadic relationship. Secondly, psychological safety was included in the present study as it has a greater association with work performance, especially when the work outcome is not fixed and when something creative and novel is included (Gallo, 2023).

According to social cognitive theory (Bandura, 1986), individuals' behaviours are primarily determined by themselves. Hence, the present study formulates the hypothesis that the individuals' PsyCap positively contributes to their innovative behaviours. Next, the mechanism of the theory further suggested that the individuals' cognition may also act on the environment and determine the probability of certain behaviours' occurrence. In other words, the environment-related factors may mediate the contribution of the individuals' personal factors to their innovative behaviours.

From a practical aspect, it is important to look into the intervening environment-related factor (psychological safety). There is a lot of training that can be done on the employees to improve their PsyCap, or the management can hire someone with the best PsyCap abilities. However, if nothing has been done on the environmental side of the organisation to encourage the occurrence of innovative behaviours, eventually the employees may also leave and search for another workplace where they can feel the support. Therefore, instead of only investigate the effect of individual PsyCap on their innovative behaviours, the incorporate of individual psychological safety as mediator can increase the awareness of the organiastion to reevaluate whether their work culture are beneficial to the employees' innovative behaviours.

In addition, based on the results of past literature (Alshebami, 2021; Cao & Zhang, 2020; Mutonyi, 2021; Sameer, 2018; Sun & Huang, 2019), the present paper hypothesised that PsyCap (an individual factor) may have a positive contribution to academics' innovative behaviours (a behaviour factor) and employees' psychological safety level (environment-related factors) may play a mediating role in the relationship.

1.8 Conceptual Framework

Social cognitive theory (Bandura, 1986) emphasised the effect of the triadic relationship between individual, environment, and behaviours, which highlighted that the starting and continuation of individuals' behaviours were highly associated with their personal intrinsic factors and their environment. The goals of the theory were to provide an explanation of how behaviours were generated, maintained, and changed (Wulfert, 2023). Based on the literature, PsyCap, which included one's hope, self-efficacy, resilience, and optimism as an individual's personal resources, may have a contribution effect on their innovative behaviours (Alshebami, 2021; Mutonyi, 2021). The present study proposes that PsyCap and its' dimensions positively contribute to innovative behaviours among Malaysian university academics.

Social cognitive theory proposed that ones' internal factors, such as cognitive beliefs and motivation, were interlocked with external factors such as rewards or punishment, and each of them could affect not only each other but also the behaviour's outcomes (Wulfert, 2023). Drawing from the theory, the present study proposed that PsyCap, which includes one's hope, self-efficacy, resilience, and optimism, have an effect on the academics' psychological safety in the working environment. Employees with hope tend to preserve or adjust their path towards their goal in order to make it come true (Tang et al., 2019), making them more likely to seek out innovative solutions or behaviours and avoid losing resources (Eid et al., 2012). People with higher self-efficacy are more likely to believe they can succeed, which in turn may make them feel safer conducting the behaviours (Eid et al., 2012). Employees with higher resilience can feel safe taking on challenges because they can always bounce back stronger

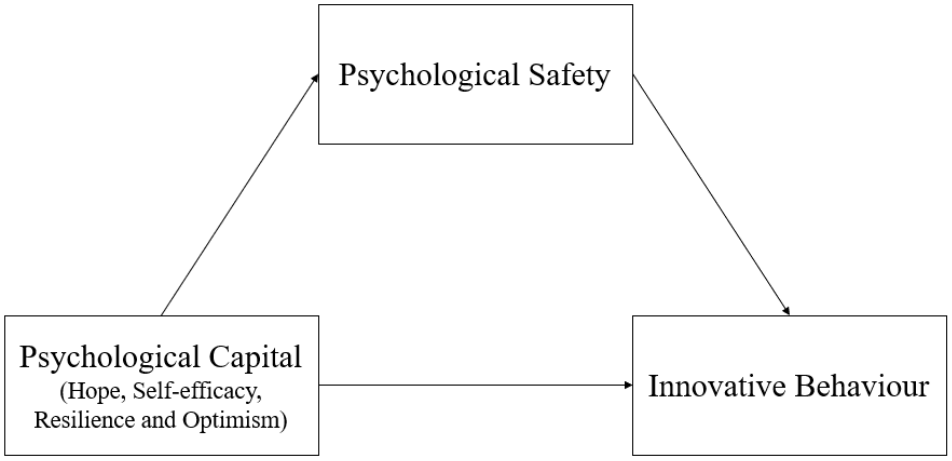
to confront the difficult issues (Luthans et al., 2007). Last but not least, optimists have the tendency to make positive and realistic attributions towards success from time to time (Carver & Scheier, 2002). Therefore, they may be able to acknowledge the possible changes and feel open or safe to implement any innovative action instead of insisting on determinism. Hence, the present study proposes that PsyCap positively contributes to individual psychological safety among Malaysian university academics.

Social cognitive theory claims that people learn about others and themselves from the social environment and form their own internal standards that later regulate their behaviours (Bandura, 2001). Based on the theory, it is notable that people may change according to the clues received from the social environment rather than from the social interaction itself (Olfat et al., 2023). The behaviour of an individual was widely accepted by researchers as being not only based on personal factors but also determined by environmental effects such as the organisational culture or social pressure (Geiger et al., 2017). The employees' psychological safety, which is determined by the work environment, was found to always have an effect on risky behaviours, such as employees' voice behaviour (Liu et al., 2022; Zhang & Huang, 2020), and coming up with creative ideas (Zhu et al., 2022). Hobfoll (1989) claimed that people strive to obtain, protect, and preserve resources they value, such as psychological resources, which can allow them to respond effectively to their working environment. Employees who feel a lack of resources at work tend to experience stress (Hobfoll & Lilly, 1993). From the above-mentioned, the present study proposes that when the employees have enough psychological resources (individual psychological safety), they are more likely to utilise them and to

carry out the innovative behaviours. On the other hand, if their psychological safety level is low, they tend to preserve it and avoid innovative behaviours that may consume their psychological resources and lead to extra stress. Hence, the present study proposes that the individual psychological safety positively contributes to innovative behaviours among Malaysian university academics.

As social cognitive theory proposed, other than one's personal factors such as feelings, biological traits, perceptions (Bandura, 2001), knowledge, experiences or psychological state (Wu et al., 2021), the external environment also plays a role in the relationship. As illustrated in Figure 1.1, the present study aims to utilise this framework of social cognitive theory (Bandura, 1986) to further investigated the underlying mechanism between academics' PsyCap and their innovative behaviours. Individual psychological safety refers to an employee's perceptions on the job environment and how others respond to his or her risky behaviours (Carmeli & Gittell, 2009). Sun and Huang (2019) pointed out that psychological safety mediated the relationship between a public university teachers' PsyCap and their innovative behaviours in China. Wang et al. (2021) also confirmed the mediating effect of subordinates' psychological safety on their leaders' PsyCap and the subordinates' innovative behaviours. Hence, the present study proposed that individual psychological safety mediates the contribution of PsyCap towards innovative behaviours among Malaysian academics.

Figure 1.1
Conceptual Framework of the Present Study



1.9 Significance of Study

1.9.1 Effect of Psychological Capital on Innovative Behaviours

Most of the studies done in Malaysia focused only on the effect of external factors on innovative behaviours in organisations (Rehman et al., 2021; Sethumadavan et al., 2020; Teddy & Law, 2019; Wah et al., 2018). The present study bridged the research gap by investigating the effect of PsyCap (an internal factor) on the innovative behaviours of academics. By understanding that PsyCap as individual resources can not only help in providing positivity to the employees but also contribute to fulfilling the expectation of positive organisational behaviours (Venkatesh & Blaskovich, 2012).

In addition, it is noteworthy that PsyCap is a concept that is able to be improved by certain training or education and can later influence one's attitudes and behaviours (Kaya & Eskin Bacaksiz, 2022). The present study focused on the PsyCap's contribution to innovative behaviours due to its malleability (Seligman, 1998). Unlike other personality traits, which tend to remain stable

over time with little that can be done to improve them, PsyCap is a state-like characteristic and is open to measurement, development, and improvement (Yadav & Kumar, 2017). In other words, trainers can look into this improvable psychological aspect and design a training to enhance the employees' PsyCap, which in turn promotes innovative behaviours and brings advantages to the organisation.

1.9.2 Effect of Psychological Capital on Individual Psychological Safety

The focus on the psychological safety of academics bridged the research gap, where most of the studies only focused on the students' psychological safety (Avanesyan et al., 2022; Ayub et al., 2022; McClintock et al., 2022; Tu, 2021; McLeod & Gupta, 2023; Korneeva et al., 2022). The role of academics' psychological safety was also worth investigating more because their roles are expanding and the ways of teaching or communicating are changing (Shahid & Din, 2021). The present study shifts some researchers' attention from students' psychological situations towards academics' psychological situations, which are equally important for the organisation to function effectively. It expanded knowledge in the field of positive psychology and positive organisational behaviours from the academics' perspective.

1.9.3 Effect of Individual Psychological Safety on Innovative Behaviour

The present study increased the awareness of the need for higher education institutions to accelerate their innovation pace in order to survive in the markets' competitiveness. By enhancing the academics' teaching performances and effectiveness, the accountability of the universities can also be enhanced (Klaeijsen et al., 2018), and a desire society and future labour

market can be shaped (Feher et al., 2022). However, the academics might have felt that their professionalism was being threatened when they were asked to adopt a new working method (Wanless, 2016). In this case, the study on the effect of individual psychological safety can reduce their worries that others will view them as incompetent and make them more likely to carry out the innovative behaviours (Wanless et al., 2013). When the academics feel psychologically safe, they may then be able to pay full attention to achieving goals despite the possible discomforts that come along with novel ideas or experiences (Wanless, 2016).

The focus on innovation in Malaysian university academics also contributed insight and aspiration to each party of the university to achieve the goals in the Malaysian Education Blueprint 2015–2025, which targets at least 70% of programs at higher education institutions to use blended learning models and drive the country's economic growth (Ministry of Higher Education, 2015). The industrial revolution 4.0, which required a more complex level of involvement and dialectical education, also has the potential to produce a better society (Xing & Marwala, 2017). Education 4.0 was led by innovation (Mirzajani et al., 2016), and education in this era required every party to be well prepared with their best abilities for the innovative community (Ishak & Mansor, 2020).

1.9.4 The Mediating Effect of Individual Psychological Safety

The present study filled a research gap by concentrating on the contribution of individual psychological resources (PsyCap) and environment-related factors (individual psychological safety) to innovative behaviours

among Malaysian university academics. This could also shed light on how social cognitive theory (Bandura, 1986) theorises that individuals, environments, and behaviours interact closely with each other in educational settings.

The effect of a possible mediator (individual psychological safety) on the relationship between PsyCap and innovative behaviour was investigated. This is to respond to the call for attention from Luthans et al. (2005) to investigate more possible moderators or mediators that may have an effect on the relationship between PsyCap and innovative behaviour.

Previous research has focused more on PsyCap as a positive psychology factor that can contribute to positive organizational behaviors and increase an organization's success (Daswati et al., 2022; Nwanzu & Babalola, 2019; Ribeiro et al., 2021). The present study provides insights on how another possible psychological factor, in this case, individual psychological safety, can play a significant mediating role in influencing the relationship between PsyCap and innovative behaviour in education sectors.

In addition, the present study was also beneficial to the human resource (HR) manager in the hiring process. The human system can be optimised, and the management of human resources can be more effective if they have knowledge about the employees' potential (Hsu et al., 2014; Luthans, 2002). When making a hiring decision, the HR manager can take into consideration the psychological resources (PsyCap and individual psychological safety) of the applicant as a reference for later innovative job outcomes. By doing so, management costs can be saved as a more suitable applicant can be selected. The chance for a re-hiring process due to turnover or unsatisfied innovative

work performances can be minimized, and the effectiveness of the organisation can be enhanced.

1.10 Definition

1.10.1 Conceptual Definition

Psychological Capital. Positive organisational behaviour was defined by Luthans et al. (2007) as the study and application of human resources strengths that are positively oriented, and those strengths are measureable, developable, and manageable for the enhancement of performance in the workplace. The human psychological capabilities that have been strictly identified as fulfilling the criteria of positive organisational behaviour are hope, self-efficacy, optimism, and resilience (Nwanzu & Babalola, 2019), and these four variables are then grouped together as PsyCap.

Individual Psychological Safety. Psychological safety was defined by Edmondson (1999) as the perception or feelings that make a group member feel safe to take a risk without worry of negative consequences. When the group members feel psychologically safe in taking interpersonal risks, they are then able to learn, change, connect, and engage in the environment (Edmondson & Lei, 2014).

Innovative Behaviour. According to Miron-Spektor et al. (2011), innovative behaviour is a process of an individuals to create, promote and implement brand new services or ideas. In the organisation level and from an employees' perspective, innovative behaviours were said to occur when new opportunities were being explore, novel ideas were being generated, the

viability of the idea were being studied and had been applying on the job (Kleysen & Street, 2001).

1.10.2 Operational Definition

Psychological Capital. PsyCap is measured using the Psychological Capital Questionnaire-24 that was developed by Luthans et al. (2007). The instrument consisted of four dimensions: hope, self-efficacy, optimism, and resilience, each with six items. The higher the total score after converting all the reversed scores, the higher the PsyCap level.

Individual Psychological Safety. Psychological Safety Scale developed by Edmondson's (1999) is used in the present study to measure the psychological safety of Malaysian university academics. It is a seven-item questionnaire, and after converting all the reversed scores, higher total scores indicate a higher psychological safety level.

Innovative Behaviour. The tendency of the university academics to carry out innovative behaviour is assessed by using a 14 items self-reported scale. The scale is developed by Kleysen and Street (2001) in order to measure the innovative behaviour of employees themselves from multidimensionality which included generativity, opportunity exploration, application, formative investigation and championing. Higher scores indicate the employees are more likely to carry out innovative behaviour in the workplace.

1.11 Summary

The present chapter explains in detail the reason and importance of choosing the topic, formulates research objectives, research questions, and

research hypotheses, introduces each of the variables, and highlights the theoretical and conceptual framework.

Chapter 2

Literature Review

2.1 Introduction

This chapter introduces the background of each variable and their relationship. The past studies related to the variables are also discussed in the present chapter.

2.2 Psychological Capital

Positive psychology is a field of psychological study that emphasises building on people's strengths rather than concentrating on the things that are wrong with someone or tackling psychopathological issues (Seligman & Csikszentmihalyi, 2000). According to the psychological resource theory of Hobfoll (2002), a higher-order core construct can be developed with the use of psychological resources that work together and have a synergetic effect on each other. Luthans et al. (2007) acknowledged the growth and potential of positive psychology and hence came up with the concept of PsyCap constructs in the work context. PsyCap was rooted from the concept of positive organisational behavior (POB), which focused on "positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (Luthans, 2002). Luthans et al. (2007) identified that hope, self-efficacy, optimism, and resilience are positive psychological resources that best fit the criteria of POB, which are then grouped together as PsyCap.

In the recent years, there was still much attention paid by researchers on the effect of PsyCap on different work-related outcomes in employees, such as

their job engagement (Khan & Nagar, 2022), stress and job insecurity (Patnaik et al., 2022), affective commitment (Ribeiro et al., 2021), job autonomy (Qureshi et al., 2022), job satisfaction (Paliga et al., 2022), turnover (Grubaugh et al., 2023), organisational silence behaviors (Kaya & Eskin Bacaksiz, 2022), and psychological well-being (Amin & Shah, 2020). In general, PsyCap as a whole was proven by the studies to have positive effects on employees' positive functioning at work (Amin & Shah, 2020; Khan & Nagar, 2022; Paliga et al., 2022; Qureshi et al., 2022; Ribeiro et al., 2021), which may be effective across different national cultures and can be considered beneficial to the global workplace (Donaldson et al., 2020).

2.3 Individual Psychological Safety

The human was born with a fight-or-flight physiological response, which was either to run away from the threat or be ready to fight with it (Cannon, 1932). In the past, this automatic body response was mainly used to protect people from actual danger when they were to live among wild animals with minimum protection. Nowadays, this reaction is still present in humans in response to real or even imagined threats, such as when someone is watching a horror movie or scared of losing a job or becoming someone who is scorned by a colleague (Ungvarsky, 2023).

In the 1960s, researchers started to investigate how this fight-or-flight response can influence employees in the workplace (Edmondson & Lei, 2014), especially when working in a group and building trust among each other is important to success. In the 1990s, a more competitive market urged organisations to look for ways to increase their success, which led to additional

attention on the psychological safety concept (Ungvarsky, 2023). Till today, psychological safety has been identified as a significant factor that has different levels of implications for an organisation (Shahid & Din, 2021).

Individual psychological safety has frequently been demonstrated in studies as a mediator between different variables related to work. For example, psychological safety mediated the relationship between corporate social responsibility and voice behaviour (Liu et al., 2022), leader-member exchange and employee work engagement (Mao & Tian, 2022), happy music and employee creativity (Zhu et al., 2022), and self-sacrifice leadership and employee voice (Zhang & Huang, 2020). The paper by Edmondson and Lei (2014) reviewed the three levels of psychological safety research analysis, which included the individual, organisational, and group levels. It is concluded that only the individual level of psychological safety makes distinctions between employees' in-role and extra-role behaviours at work. It was also notable that when risky and extra-role behaviours such as voice behaviour (Liu et al., 2022), employees' creativity (Zhu et al., 2022), and employee voice (Zhang & Huang, 2020) are involved, the individual's psychological safety always has an effect. Similarly, innovative behaviours are considered risky extra-role activities to be carried out by academics. Hence, the present study investigated the mediating effect of individual-level psychological safety on the association between the academics' PsyCap and their innovative behaviours.

2.4 Innovative Behaviour

Schumpeter (1934) was regarded as one of the first researchers to recognise innovation as the process of generating, implementing, and gathering

something novel together. In the 1950s and 1960s, the definition of innovation was changing, and researchers tended to view the process of innovation from a technical aspect (Marquis, 1969; Schmookler, 1957). The concept of innovation then changed from a technical aspect to creating new ideas in the 1980s (Amabile, 1983), and Urabe (1988) further claimed that innovation should not limit to creating but also include the implementation of new ideas.

On the other hand, researchers also discussed "who" is responsible for the innovation. King and Anderson (2002) claimed that innovation was the introduction of something novel to an individual, group, organisation, or wider community, while West and Farr (1990) pointed out that innovation can happen at different levels, such as at the individual, team, or organisational level. West and Farr (1990) further pointed out that innovation at the organisational level depends on the employees who are to generate and perform the novel ideas. From the above, the term "innovative work behaviours" was then defined by Jong (2007) as the action taken by the employees to initiate and consciously introduce new and helpful ideas within their job role and organisation. According to Farrukh et al. (2022), an employee's innovative behaviours have continued to be a major focus of plenty of studies ever since Scott and Bruce's (1994) first work on them.

According to Shih and Susanto (2011), the innovative behaviours of employees were the key element of organisational innovation. Previous studies identified a lot of possible antecedents of an employee's innovative behaviours at work, such as types of leadership (Erhan et al., 2022; Guo et al., 2023; Khan et al., 2022), employees' proactive behaviours and workplace spirituality (Gultom et al., 2022), affective commitment, diversity management, and

employee engagement (Ghasempour Ganji et al., 2021), with different mediators. In addition, much research related to innovative behaviours appeared after the influence of the COVID-19 pandemic (Astuti et al., 2023; Karani et al., 2023; Muñoz et al., 2022; Nilasari et al., 2022; Oe & Le, 2023; Zhang et al., 2022), indicating the increasingly important role of employees' innovative behaviours towards an organisation's competitiveness and survival.

2.5 Psychological Capital and Innovative Behaviour

Previous research has established a positive link between PsyCap and employee innovative behaviour across industries and countries, such as among employees of small and medium enterprises (SMEs) in Saudi Arabia (Alshebami, 2021), frontline sales representatives (car dealers) in Norway (Slåtten et al., 2019), Egyptians from different companies with different professions (Sameer, 2018), South Africa's travel and automotive industries' employees (Milner & Criticos, 2023), and hospital nurses in China (Yan et al., 2020) and Nigeria (Nwanzu & Babalola, 2019).

The study of the relationship between the PsyCap and innovative behaviours in educational settings was also done by some researchers (Mutonyi, 2021; Sun & Huang, 2019). Mutonyi (2021) examined the effect of higher institutions academics' PsyCap on their innovative work behaviours in Norway, which was similar to the study of Sun and Huang (2019) that was done in China, and both only focused on the public sector academics. Results from the two studies showed that there is a significant and positive relationship between the academics' PsyCap and their innovative behaviours.

In general, the previous studies consistently concluded that high PsyCap employees tend to display innovative behaviours, no matter in which country or job field they are employed. Hence, the present study hypothesises that PsyCap positively contributes to innovative behaviours among Malaysian university academics (H1).

2.6 Psychological Capital's Dimensions and Innovative Behaviour

Most studies investigated and demonstrated the positive contribution effect of PsyCap as a whole on employees' innovative behaviours (Alshebami, 2021; Mutonyi, 2021). There have also been studies that look at the separate contribution effect of the PsyCap's four dimensions: hope, self-efficacy, resilience, and optimism, on employees' innovative behaviour (Milner & Criticos, 2023; Nwanzu & Babalola, 2019; Sameer, 2018).

When comparing the three studies that examined the separate effect of PsyCap's dimensions, the results was inconsistent. Nwanzu and Babalola (2019) found that optimism had the strongest contribution effect, followed by self-efficacy, while hope and resilience did not positively and significantly contribute to the employees' innovative behaviours. However, Sameer (2018) found that hope had the strongest contribution effect, followed by PsyCap as a whole, self-efficacy, optimism, and resilience. On the other hand, the study by Milner and Criticos (2023) found that self-efficacy was the only construct that had a contribution effect on employees' innovative behaviours.

From the above mentioned, it was notable that only the contribution of self-efficacy to employees' innovative behaviours was quite consistent in a way that it always positively and significantly contributed to the employees'

innovative behaviours. On the other hand, when comparing the three studies, the contribution effect of resilience is also consistent in a way that it may have either no significant effect (Milner & Criticos, 2023; Nwanzu & Babalola, 2019) or only be the weakest contributor to employees' innovative behaviours (Sameer, 2018). Next, the contribution effect of hope was unclear since some researchers claimed that it had the strongest effect (Sameer, 2018), while others found it did not have any significant effect (Milner & Criticos, 2023; Nwanzu & Babalola, 2019) on employees' innovative behaviours. The situation was the same with optimism, where Nwanzu and Babalola (2019) found it had the greatest effect on employees' innovative behaviours, but Milner and Criticos (2023) found that there was no significant contribution effect of optimism on employees' innovative behaviours.

The inconsistent contribution effect of hope on innovative behaviours may be due to the job nature of the target participants in the three studies. In the study of Sammer (2018), it was found that hope has the strongest contribution effect on the employees' innovative behaviours. The majority of the study's participants are from departments related to teaching, consulting, information technology, and human resources, which may require more problem-solving and creativity that lead to a significant role of hope in their innovative behaviours. On the other hand, the study of Milner and Criticos (2023) as well as Nwanzu and Babalola (2019) found that hope did not have a significant contribution effect on innovative behaviours among employees from the travel and automotive industries as well as among employees from public hospitals, respectively. These more structured and competitive industries may lead employees to rely less on hope to carry out innovative behaviours.

Next, optimism was found to have the strongest contribution effect on innovative behaviours among the employees from public hospitals (Nwanzu & Babalola, 2019) but did not have a significant effect among employees from the travel and automotive industries (Milner & Criticos, 2023). This may be due to the stressful job environment at the hospital, which led to a significant role for optimism. Optimism is beneficial for employees in both routine medical tasks and medical emergencies (Boldor et al., 2012), protects them from experiencing too much stress, and fosters mind peace (Naderi et al., 2021), which may in turn allow them to have more psychological resources to carry out innovative behaviours.

2.6.1 Hope and Innovative Behaviours

To the best of the researcher's knowledge, there is a lack of research focused on the relationship between the single variable of employees' hopes and their innovative behaviours. A few studies that focused on the effect of hope on employees' creativity were reviewed in the present study. Firstly, Namono et al. (2022) investigated the effect of hope on the creativity of public university academics in Uganda. The results indicated that there was a significant and positive effect of hope on three different dimensions of creativity, which included the exploration, generation, and championing of ideas. The positive link between hope and creativity was also found in the studies of different countries and job fields, such as those of employees from retail organisations in Portugal (Rego et al., 2014) and manufacturing organisations in China (Yu et al., 2019). As thinking creatively can be the foundation for implementing innovative behaviours (Shilling, 2006), the present study hypothesises that hope

positively contributes to innovative behaviours among Malaysian university academics (H2).

2.6.2 Self-efficacy and Innovative Behaviours

In educational settings, the study of Karmila et al. (2020) on Indonesian private university lecturers found that there is a positive effect of self-efficacy on the lecturers' innovative behaviours. The purpose of the study was to find methods for improving the lecturers' innovative behaviours in the COVID-19 pandemic, and the results indicated that by strengthening the lecturers' self-efficacy, their innovative behaviours may be enhanced. Apart from that, Mumtaz and Parahoo (2019) investigated the role of self-efficacy in the innovative performances of the United Arab Emirates service sector's employees. The results indicated that both self-efficacy effort and self-efficacy persistence have a positive and direct effect on the employees' innovative performance. To put it another way, employees are more likely to carry out innovative performances if they are more likely to make an effort to accomplish the task (self-efficacy effort) and if that effort persists even in the face of obstacles (self-efficacy persistence). Hence, the present study hypothesises that self-efficacy positively contributes to innovative behaviour among Malaysian university academics (H3).

2.6.3 Resilience and Innovative Behaviours

Although some studies mentioned earlier (Milner & Criticos, 2023; Nwanzu & Babalola, 2019) rejected the hypotheses that resilience has a significant contribution effect on innovative behaviours, other studies confirmed the positive relationship between resilience and innovative

behaviours among employees. Damayanti and Kurniawan (2023) investigated the relationship between resilience and innovative behaviour among Indonesian employees who were married and held work positions in the oil and gas sector. Their result highlighted the significant and positive effect of resilience, which exceeds the effect of work-family balance, on the already-married corporate employees' innovative behaviours. A similar result was generated in the hospitality industry in Ethiopia, where a positive relationship was found between the resiliency of employees and their service innovation (Senbeto & Hon, 2020). In the educational setting, Sun (2022) concluded that resilience positively and significantly contributed to the creativity of Chinese English foreign language teachers in China. There was also a study that concluded a positive relationship between the resilience and creativity of psychological counsellors in Saudi Arabia (Arnout & Almoied, 2021). In general, most of the previous studies agreed on the positive relationship between the employees' resilience and their foundation of innovative behaviours (creativity) as well as the implementation of innovative behaviours. Hence, the present study hypothesises that resilience positively contributes to innovative behaviour among Malaysian university academics (H4).

2.6.4 Optimism and Innovative Behaviours

To the best knowledge of the researcher, there was only one study focused on the relationship between optimism and innovative behaviours. The study of Li and Wu (2011) reached the conclusion that optimism had a positive contribution effect on innovative behaviours among undergraduates from Taiwan's private and public universities. There was a lack of studies focused on the single variable of employees' optimism and their innovative behaviours.

However, there were studies that investigated the relationship between the employees' optimism and their creativity at work. Rego et al. (2018) studied the prediction of the optimism-pessimism ratio on the employees' creativity and concluded that there is a positive relationship between optimism and creativity as well as a negative relationship between pessimism and creativity. In the study of Yu et al. (2019), a positive and significant link was also found between optimism and creativity among the Chinese employees who were working in manufacturing organisations. As innovative behaviours are always built on the basis of creative thinking (Shilling, 2006), the present study hypothesises that optimism positively contributes to innovative behaviour among Malaysian university academics (H5).

2.7 Psychological Capital and Individual Psychological Safety

The study by Sun and Huang (2019) revealed that the PsyCap whole construct significantly and positively contributed to the psychological safety of academics in a Chinese university. In another study by Wang et al. (2021), the relationship between leaders' PsyCap and subordinates' psychological safety was investigated. The study gave insight into the leader component, where higher level leaders' PsyCap can also significantly and positively contribute to the individual psychological safety of their subordinates. On the other hand, the study by Wu et al. (2022) revealed that there was a positive relationship between the psychological safety of part-time MBA students in school and their PsyCap at work. To the best of the researcher's knowledge, only these three studies focused on the relationship between the PsyCap construct as a whole and the employees' psychological safety.

From the above-mentioned results, the present study hypothesises that PsyCap positively contributes to individual psychological safety among Malaysian university academics (H6).

2.8 Individual Psychological Safety and Innovative Behaviour

The positive relationship between individual psychological safety and employees' innovative behaviours was well-known in the previous studies. The studies were done in different countries, such as Egypt (Ahmed et al., 2023), Pakistan (Amanat et al., 2022; Dar et al., 2022), China (Cao & Zhang, 2020; Liu et al., 2023; Xu et al., 2022), Australia (Brunetto et al., 2022), and Norway (Andersson et al., 2022). The participants were also from different types of companies and fields, such as technology (Ahmed et al., 2023; Amanat et al., 2022; Xu et al., 2022), manufacturing (Cai et al., 2023), healthcare (Brunetto et al., 2022), and education (Dar et al., 2022).

According to Lyu (2016), the higher level of psychological safety in an organisation was able to promote the employees' innovative behaviours due to the increase in their creativity, learning, and engagement. There were also theories that supported the relationship between psychological safety and innovative behaviours, such as the conservation of resources (COR) theory (Hobfoll, 1989), which focused on the motivators that caused the employees to carry out certain behaviours in the workplace, especially those related to acting innovatively, as well as the social cognitive theory (Bandura, 1986). Hence, the present study hypothesised that individual psychological safety positively contributes to innovative behaviours among Malaysian university academics (H7).

2.9 Psychological Capital, Individual Psychological Safety and Innovative Behaviour

Psychological safety was being determined as the top characteristic of a team with high performance (Bergmann & Schaeppi, 2016), which encouraged the employees to participate in risky interpersonal behaviours such as open communication, speak out any of their concerns, and strive for more feedback (Pearsall & Ellis, 2011). It was often studied as a mediator of different work-related variables in organisations, such as sustainable leadership and sustainable performance (Asad et al., 2021), as well as leader-member exchange and employee work engagement (Mao & Tian, 2022).

There were studies that showed that PsyCap had a positive and significant effect on innovative behaviours (Alshebami, 2021; Cai et al., 2023; Mutonyi, 2021; Sweetman et al., 2011). However, only a few studies investigated the mediating effect of individual psychological safety on the relationship. One of the studies was done by Sun and Huang (2019) at a Chinese public university. They concluded that PsyCap did have a positive and significant contribution effect on the teachers' innovative behaviours, and psychological safety partially mediated the relationship. In other words, academics in the university with a higher level of PsyCap lead to a higher level of the employees' psychological safety and, in turn, advocate more innovative behaviours.

There was a similar study done by Wang et al. (2021), however, they investigated the PsyCap of the leader instead of employees themselves in South China. The results of Wang et al. (2021) revealed that the relationship between

the leaders PsyCap and their perceived subordinates' innovative behaviours were partially mediated by the subordinates' level of psychological safety. This study again highlighted the important of individual psychological safety as the potential underlying mechanism in between the relationship of PsyCap and innovative behaviours. Hence, the present study proposed that individual psychological safety mediates the contribution of PsyCap towards innovative behaviours among Malaysian university academics (H8).

2.10 Summary

This chapter provides an analysis of relevant past studies to support the present study. The relationship between the PsyCap, individual psychological safety, and innovative behaviours has been further explained in the present chapter to provide a clearer understanding.

Chapter 3

Methodology

3.1 Introduction

The following chapter explains the research design, sampling method, sample size calculation, characteristics of participants, instrument used, study procedure, and data analysis process.

3.2 Research Design

The present study adopted a cross-sectional research design that was characterised by one-time data collection, where responses from participants were collected only once (Kesmodel, 2018). The present study aimed to examine the level of PsyCap, individual psychological safety, and innovative behaviour of the academics at a particular time. This kind of research design is broadly used in social science research in order to understand the participants' opinions, behaviours, knowledge, intentions, and attitudes (Sedgwick, 2014). In the field of positive psychology among workers, there were also many studies that adopted a cross-sectional research design to explore the relationship between different variables (Alan et al., 2022; Duan et al., 2022; Thampi & Pai, 2022; Yunneng et al., 2022).

According to Meninger (2012), cross-sectional or longitudinal research designs are potential methods to be used when testing hypotheses. The longitudinal or experimental research designs were not to be used in the present study as no multiple observations or changes in the variables over time were made (Cummings, 2017). The data was recorded without manipulating the variables and was intended to provide estimations for the entire population from

the results of representative samples (Kesmodel, 2018). The participants recruited in a cross-sectional study were based on criteria that were set in advance of the study (Setia, 2016), and the present study targeted employed university academics in Malaysia.

In general, cross-sectional designs used survey questionnaires or conducted interviews to collect data, with human responses being the main resource for analysis (Cummings, 2017). The present study was based on a quantitative cross-sectional research design, where a questionnaire was used to obtain the information needed from Malaysian university academics. Most of this research design collected data by using a questionnaire, which referred to a form that had been used to collect data from participants by asking a series of questions (Olsen & George, 2004). According to Polit and Beck (2014), the use of questionnaires is flexible, quick, and able to acquire information about what is happening now in many different studies about humans.

The use of the quantitative research design in the present study was scientific in nature and highlighted the use of numbers or figures to collect and analyse data (Bryman, 2001). All the data gathered were analysed using the Statistical Package for Social Science (SPSS) (Connolly, 2007) and PROCESS (Hayes, 2018). The use of this type of research design is replicable due to the apparent objectives and clear guidelines (Shank & Brown, 2007). Generally, self-report questionnaires had a set of written statements describing the test subject using Likert-style responses and could be accomplished on paper and pencil or online (Demetriou et al. 2015). In the present study, all relevant data were collected via online, self-administered questionnaires.

3.3 Sampling Method

According to the latest information from the Ministry of Higher Education (2021), there are 31,568 academics employed in Malaysian public universities and 15,504 academics employed in Malaysian private universities. The number and location of participants were too widespread for the researcher to conduct a probability sampling method, which required each sample in the population to have a random and equal chance of being selected in the study (Battaglia, 2008). Hence, the non-probability sampling method was used in the present study, which is characterised by the researcher subjectively selecting samples to be included in the study without giving the population an equal chance (Etikan, 2016). In general, this type of sampling method is used whenever the probability sampling method is not feasible due to the population being too dispersed (Bernard, 2002) or a financial or time constraint (Redondo, 2016).

The purposive sampling method is one of the non-probability sampling methods and was used in the present study to ensure a better match between the sample and the study's goals and objectives (Campbell et al., 2020). In this sampling method, only participants who fulfilled the criteria were recruited (Crossman, 2019). In other words, it is the researchers' decision on what data is required for the study, and they hence select the particular individuals who are able to provide information about it to participate in the study (Bernard, 2002). By having predetermined characteristics that are similar to the population, a representative sample and meaningful results can be obtained (van Hoeven et al., 2015). According to Andrade (2021), the more criteria set for the inclusion

or exclusion of samples, the more purposeful the samples were. The details of the criteria set are further discussed in the later part about participants.

Etikan (2016) classified the purposive sampling method into seven forms. Among the different forms, the present study was classified as homogeneous sampling, which concentrated on samples with similar characteristics. The selected sample in the present study, which was the Malaysian university academics, was similar in terms of their job nature as lecturers, being actively employed in universities, and living in Malaysia. In addition, all of them in Malaysia experienced a similar effect during the COVID-19 pandemic under the same government policy. Andrea (2021) suggested that one of the advantages of the purposive sampling method was that the sample could be made homogeneous, and when the variance between the subjects was decreased, statistical significance results were more likely to be obtained.

The official websites of different universities were visited in order to gather the academics' email addresses for an invitation to take part in the present study. The purposive sampling method ensures that the emails were only sent to academic staff in Malaysia by checking the university address and ensuring the website link or email address ends with ".my". In addition, the job titles of the staff are being double-checked to ensure no email was sent to other irrelevant staffs, such as administrative officers or lab assistants. In short, the inclusion criteria were academic staff who were actively employed in Malaysian universities in between the period of COVID-19 pandemic, and academics serving in other types of higher education institutions, such as colleges or college universities, were excluded from the present study.

3.4 Sample Size

Monte Carlo power analysis for indirect effects (Schoemann et al., 2017) was used in the present study to calculate the required sample size (as shown in Figure 3.1). "Set Power, Vary N" was chosen as it allowed the researcher to know the range of sample size required to achieve a certain level of power. The target power and sample size steps were set at 0.95 and 1, respectively. The value of 1 in the sample size step indicated that the number of participants required for different power levels was increased and shown one by one.

Schoemann et al. (2017) suggested that the replication total number required at least 1000 or greater in general, so that it is enough to have stable power and more accurate sample size estimation. The present study inserted 5000 as the total number of replications, according to the suggestion of Mundform et al. (2011), which is based on empirical data. The values for "Monte Carlo Draws per Rep" and "Random Seed" were set by default.

The correlation coefficients of X and M were 0.614 (Agarwal & Farndale, 2017), X and Y were .511 (Yan et al., 2020), and M and Y were .767 (Cao & Zhang, 2020), where X referred to PsyCap, M referred to psychological safety, and Y referred to innovative behaviours. The standard deviation of each variable was calculated by using the average values from two previous studies, respectively (refer to Table 3.1). As a result, the sample size required was 38 with .95 power (as shown in Figure 3.1).

Table 3.1

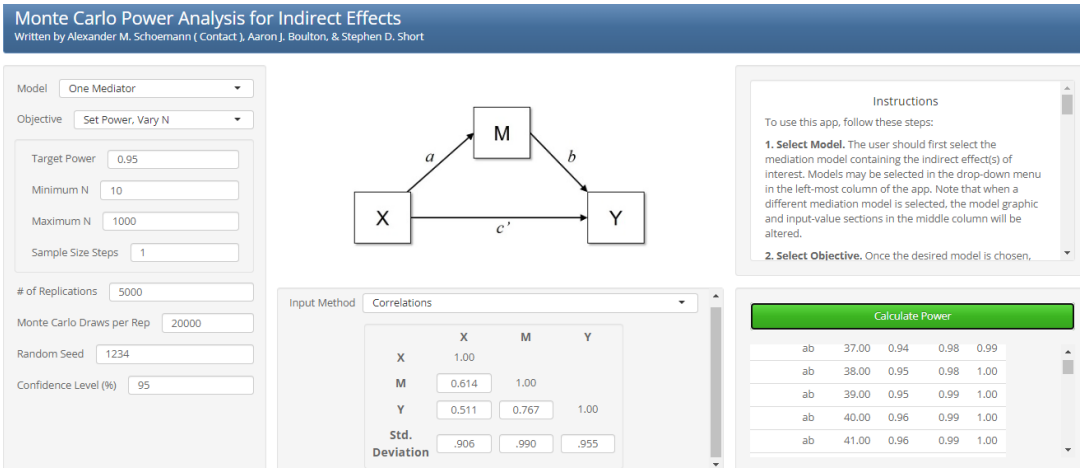
Standard Deviation of PsyCap, Individual Psychological Safety and Innovative Behaviours

Variables	SD	Citation	Average SD
PC (X)	.988	Nafei (2015)	.906
	.824	Yan et al. (2019)	
PS (M)	1.030	Edmondson (1999)	.990
	.950	Wang et al. (2022)	
IB (Y)	.970	Miller & Criticos (2023)	.955
	.940	Steyn & Bruin (2019)	

Note. PC = Psychological Capital, PS = Individual Psychological Safety, IB = Innovative Behaviours, SD = Standard Deviation

Figure 3.1

Monte Carlo Power Analysis for Indirect Effects



According to the central limit theorem, a sample size of 100 or larger can address the issue regarding the normality violation (Ghasemi & Zahediasl, 2012). Cummings (2017) also agreed that more accurate results could be obtained with a larger sample size. In addition, due to the high chance of missing data in the research field of social and behavioural sciences (Ballard et al., 2021), where an average of 38% of 100 datasets of social science surveys were

incomplete (Dodeen, 2018), the present study recruited more than 100 participants. As a result, about 10,749 invitations for participation were sent, and 143 effective data were used for analysis.

3.5 Participants

The inclusion criteria for the present study's participants were academics who taught in Malaysian university-level higher institutions with any experience levels. All the academics were recruited from both public and private universities that were located in Malaysia, regardless of whether they were local universities or branches of overseas universities in Malaysia. The two types of universities (public and private) were included in the present study, as when the different types of higher education institutions are taken together, they can have a greater contribution effect to the education field, such as the academic research output (Prathap & Ratnavelu, 2015).

There were no criteria set for the academics' age. This is because, according to the study of Gong et al. (2010), employees' age has no significant relationship with their innovative behaviours when the age stereotype is controlled. In other words, age as a factor that may influence an employee's innovative behaviour can be considered a stereotype, and in fact, innovative behaviour may not be affected by age. Another study done by Guillén and Kunze (2019) also claimed that the effect of age on innovative behaviours in the workplace was actually not that straight-forward. After reviewing the literature, many contradictory results were found among the relationships between the employees' age and their innovative behaviours (Frosch, 2011; Ng & Feldman, 2013; Park & Kim, 2015; Rietzschel et al., 2016). Since there was

no strong evidence to indicate that age may influence one's innovative behaviours, the present study did not set limitations on the age of the participants.

There were also no criteria set for the academics' employment duration or working experiences due to its' controversial effect on innovative behaviours (Daveri & Parisi, 2015). Jones (2010) discussed how unexperienced employees were able to produce novel changes to the existing market, however, there were also examples where drastic innovation was implemented by highly experienced workers in their industry, such as Steve Jobs and his different devices (Daveri & Parisi, 2015). To the researcher's best knowledge, there was a lack of strong evidence indicating that academics' working experiences in the related field can have an effect on their innovative working behaviour. Therefore, the present study did not set criteria according to the academics' working duration or experiences. As long as the academics were actively employed and involved in the teaching process during the COVID-19 pandemic, which was also the data collection period, their responses are to be included in the data analysis.

The exclusion criteria for the participants in the present study were university academics who were retired or unemployed at the time of the research, as well as administrative staff and lab assistants who were not involved in teaching. This was due to the fact that the interest of the present study is to investigate the relationship between PsyCap, individual psychological safety, and innovative behaviours of academics who are involved in the teaching process during the COVID-19 pandemic. Those academics who retired or were unemployed in that period are not affected by the pandemic in terms of their

working duties. On the other hand, administrative staff and lab assistants were excluded from the present study as their roles were very different from those of academics, who involve multiple tasks, including teaching.

Academics from colleges and university colleges were excluded from the present study due to their different nature as compared to universities, such as their number of students, campus size, and types of programme or degree offerings. In general, colleges and university colleges may have fewer students and smaller campuses (EMGS, 2023), and most of the colleges may have limited resources in finance, facilities, and programme choice (Zainal, 2013). The academics in universities have to focus more on research work and have to teach larger classes; on the other hand, the academics in colleges and university colleges can focus more on teaching, have smaller classes, and be able to conduct more personalised guidance (Lantra, 2022). Due to these differences, academics from colleges or university colleges were excluded from the present study in order to increase the reliability of the results for the targeted population.

In addition, Malaysian academics who serve in universities located overseas were excluded, as the present study intended to investigate the relationship between the academics' PsyCap, psychological safety, and innovative behaviours in Malaysian circumstances. However, the international staff who were employed and taught at universities located in Malaysia were included in the present study. The upheld principle was that the contribution of the academics was in and to the education field in Malaysia. In other words, whether the academics who teach in Malaysia are foreigners or not, their innovative behaviours were to be contributed to their workplaces, which are the universities in Malaysia. Hence, local or international staff who teach at

Malaysian universities were included in the present study. The targeted participants included part-time or full-time junior lecturers, senior lecturers, assistant professors, associate professors, professors, deans, heads of departments, and any other title of position involved in the teaching process in Malaysian universities.

Table 3.2 shows the summary of the sample characteristics and Table 3.3 shows the descriptive statistics for the participants' demographic variables in the present study.

Table 3.2
Summary of Sample Characteristics

Inclusion Criteria
Malaysian academics who serve at a Malaysian university
Foreign academics who serve at a Malaysian university
Any experience and age
Actively employed during the data collection period
Part-time or full-time academics

Table 3.3

Descriptive Statistics for Demographic Variables (n=143)

	N	%	*M*	*SD*
Age			40.9	8.78
Gender				
Male	65	45.5		
Female	78	54.5		
Type of University				
Private	99	69.2		
Public	44	30.8		
Race				
Malay	62	43.4		
Chinese	55	38.5		
Indian	12	8.4		
Others	14	9.8		
Working Mode				
Home	8	5.6		
Office	65	45.5		
Mixture of Both	68	47.6		
Others	2	1.4		
Highest Education Level				
Bachelor Degree	8	5.6		
Master Degree	54	37.8		
Doctoral Degree	76	53.1		
Professional Degree	5	3.5		

3.6 Instruments

3.6.1 Psychological Capital Questionnaire-24

The PsyCap of the academics was measured using the Psychological Capital Questionnaire-24 created by Luthans et al. (2007). The questionnaire consisted of 24 items, which included the four dimensions (hope, self-efficacy, resilience, and optimism). Each of the dimensions consisted of six items, and it was a self-reported survey with a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). The sample item of each dimension included “There are lots of ways around any problem” (hope), “I feel confident contributing to

discussions about the company's strategy" (self-efficacy), "I usually take stressful things at work in stride" (resilience), and "I always look on the bright side of things regarding my job" (optimism).

The overall Cronbach alpha of each dimension ranges from .88 to .89 (Luthans et al., 2007). There are three reversed items, which include item 13 ("When I have a setback at work, I have trouble recovering from it and moving on"), item 20 ("If something can go wrong for me work-wise, it will"), and item 23 ("In this job, things never work out the way I want them to"). After reversing the scoring, the higher the total score, the higher the level of PsyCap in the participants.

3.6.2 Psychological Safety Scale

The Psychological Safety Scale created by Edmondson (1999) was used in the present study to measure the psychological safety of the academics on a 7-point Likert-type scale (1 = *very inaccurate* to 7 = *very accurate*) (refer to Appendix C). The scale contained seven items, of which three were reversed coded. The reversed items included items 1 ("If you make a mistake on this team, it is often held against you"), item 3 ("People on this team sometimes reject others for being different"), and item 5 ("It is difficult to ask other members of this team for help"). The value of the Cronbach alpha of the scale is .78 (Wang et al., 2021). The higher the total score, the higher the level of psychological safety among the academics.

3.6.3 Innovative Behaviour Scale

Kleysen and Street (2001) developed a 14-item questionnaire to measure the innovative behaviour of employees themselves. Participants were required

to rate themselves on a 6-point scale (1 = *never* to 6 = *always*) (refer to Appendix D). The 14 items were made up of five subscales, which included exploration of chance, generativity, information investigation, championing, and application. The sample item of the scale is "How often do you implement changes that seem to be beneficial?". According to Kleysen and Street (2001), innovative behaviours were multi-dimensional constructs, and they reported that all the sub-scales achieved reliability coefficients that were higher than 0.70. There are no reversed items in the scale, and the higher the total score, the more likely it is that the employees to exhibit innovative behaviours in the workplace.

3.6.4 Pilot Study

A pilot study was first conducted before the actual study in order to test the feasibility of the planned research method (In, 2017) and increase the possibility of research success. It can identify and give an early warning, if any, about possible practical problems such as inappropriate instruments, too complicated research methods, or being unable to follow the research protocol (Teijlingen & Hundley, 2002). In (2017) claimed that, in general, the sample size of the pilot study was not calculated as its main purpose was not to test the hypothesis. Leon et al. (2011) also agreed with it and stated that no inferential statistical test should be included in the process of a pilot study. However, some literature suggests that the sample size of the pilot study should be 10% of the actual study sample size (Connelly, 2008; Lackey & Wingate, 1998; Treece & Treece, 1982). Others suggested that 10 (Nieswiadomy, 2002) or 10 to 30 participants (Hill, 1998; Isaac & Michael, 1995) should be appropriate. In the present study, 32 effective responses were used in the pilot study. The reliability

of the instruments was tested, and the Cronbach's alpha of the three main scales ranged from .75 to .93, as shown in Table 3.4.

Table 3.4

Cronbach's Alpha Value for Pilot Study (n=32)

Scale	Cronbach's alpha Based on Standardized Items
Psychological Capital	.89
Hope	.85
Self-efficacy	.83
Resilience	.44
Optimism	.45
Psychological Safety	.75
Innovative Behaviours	.93

The literature indicated that the acceptable level of Cronbach's alpha ranged from .60 to .95 (Kubiszyn & Borich, 2000; Pallant, 2001; Tavakol & Dennick, 2011; Ursachi et al., 2015). The Cronbach's alpha of the instruments used in the pilot study fell in between the ranges, and no practical problems were found during the entire pilot study. Hence, the actual study used the same instruments and data collection method. In the actual study, the reliability of the three main scale ranged from .75 to .94, as shown in Table 3.5.

Table 3.5

Cronbach's Alpha Value for Actual Study (n=143)

Scale	Cronbach's alpha Based on Standardized Items
Psychological Capital	.90
Hope	.82
Self-efficacy	.87
Resilience	.60
Optimism	.50
Psychological Safety	.75
Innovative Behaviours	.94

3.7 Procedures

The application for ethical clearance for the present study was first conducted before the data collection process. Qualtrics, an online survey software, was used to get responses from targeted participants from April 11, 2022, to August 19, 2022. The survey started with an information sheet that stated clearly the research title, introduction, purpose, targeted participants, and pros and cons of the present study. Prior to answering the survey, participants had to acknowledge a consent form after viewing the personal data protection notice. By understanding the full information about the present study, all of the participants who fulfil the criteria are free to take part in or withdraw from the research. Next, a total of 45 items from the three instruments (the Psychological Capital Questionnaire-24, the Psychological Safety Scale, and the Innovative Behaviour Scale) were being keyed into Qualtrics. The brief information about the participants, such as their age, sex, race, physical work environment, highest educational level, type of university (private or public), and position, was obtained in the last part of the survey. A link that directed the participants to the online survey form was then generated.

The ethical approval letter from the ethics committees (refer to Appendix A) was obtained. A pilot study was conducted in order to collect the preliminary data and measure the reliability of the instruments (Teijlingen & Hundley, 2002). An email address list of academics from one public and one private university in Malaysia was obtained from their respective official websites. A total of 400 invitation emails with an ethical approval letter, informed consent form, and survey link were sent to collect responses from the academics. 32 effective responses were used in the pilot study, and the

reliability of the instruments was tested. There were no practical problems found in the process of the pilot study, and all the instruments reached acceptable reliability. Hence, a similar method was used in the actual study. A total of 10,749 invitation emails were sent to academics from Malaysian public and private universities. Finally, 143 effective responses were used for data analysis.

3.8 Data Analysis

All the data collected by Qualtrics were exported to the software of Statistical Package for Social Science (SPSS) (Connolly, 2007) for data diagnostic, data cleaning, assumption testing and further analysis. Multiple linear regression model was used in the present study. A diagnostic process was first carried out in order to identify any unusual observations that may abnormally influence the final results, which included outliers and influential cases (Nurunnabi et al., 2016).

Outliers are the unusual data that is far away from the bulk of the data (Hadi et al., 2009) or from the predicted outcome value (Schmidt & Finan, 2018). This unusual observation, which appears quite frequently in the real data, can cause a huge change or bias to the regression analysis results and hence is vital to be identified (Blatná, 2006; Leys et al., 2018). In addition, influential cases refer to any of the cases that, if deleted, can cause a significant change to the conclusion of the regression analysis (Belsley et al., 1980). It was vital to identify the influential cases in the regression model, as if the research's conclusion changes when certain cases are removed, the reliability and usefulness of the model can be in doubt (Shih & Weisberg, 1986).

The diagnostic techniques of the outliers and influential cases can be classified into two major categories, which include the use of the graphical method and the analytical method (Ampanthong & Suwattee, 2009). Boxplot, histogram, and Q-Q plot, as the simple visualisation tools in the graphical method, were used to identify the possible outliers. Analytical methods that included Cook's distance (Cook & Weisberg, 1982), Mahalanobis distance (Mahalanobis, 1936), and centered leverage distance were also used to detect multivariate outliers and influential cases. The influential cases may exist if the Cook's distance value was larger than one (Stevens, 1984) or when the Mahalanobis distance was more than 15 (Mahalanobis, 1936). Later, a decision was made whether to remove or retain the unusual observations.

After the diagnostic process, the assumptions of the linear regression model, which included the normality, multicollinearity, independence of errors and variables, as well as residual normality, linearity, and homoscedasticity, were tested to ensure the generalisability of the regression model (Berry, 1993).

Skewness and kurtosis are two of the most widely used methods to evaluate the distributional shape of data (Blanca et al., 2013). Any values of the skewness and kurtosis that fall in between -2 and +2 are considered acceptable normal distributed data and fulfil the normality assumption (George & Mallery, 2010), especially those values at about zero (Brown, 1997). The skewness, kurtosis, histogram, and Q-Q plot were able to show that the data was drawn from a normally distributed population, and more accurate conclusions regarding reality can be drawn from the present study (Gravetter & Wallnau, 2014; Trochim & Donnelly, 2006).

The multiple linear regression model also assumed that there was no or little multicollinearity in the data. Multicollinearity can be defined as the predictor variables that have an excessive correlation (Olsen et al., 2020). If the predictors are highly correlated, this suggests that both of them are measuring the same thing, which is what the present study wanted to avoid (Field et al., 2012). This assumption was tested by using Variance Inflation Factors (VIF) and a tolerance value. A VIF value of 10 or more (Kutner et al., 2004; Shieh, 2010) and a tolerance value less than .10 indicate the presence of multicollinearity.

The present study used the Durbin-Watson test to ensure the errors were independent from each variable so that accurate inferences and unbiased results could be obtained (Olsen et al., 2020). The Durbin Watson value ranging from 0 to 4, with values in between 1.5 and 2.5, was considered normal or no autocorrelation, especially when the values were closer to 2 (Arjmand & Shafiei, 2018; Turner, 2020). Last but not least, a scatterplot was used as the residuals analysis in order to test the assumptions of residual normality, linearity, and homoscedasticity.

After ensuring that the data fulfilled the assumptions necessary to conduct parametric analyses, multiple linear regression was used to examine the contribution of PsyCap to psychological safety (path a), psychological safety to innovative behaviour (path b), and PsyCap to innovative behaviour (path c). The contribution of the separate effects of each PsyCap's dimension (hope, self-efficacy, resilience, and optimism) towards innovative behaviours was also being investigated. Later, Hayes's (2018) PROCESS macro (Model 4) with

5,000 bootstrapping was used to test the mediating effect of psychological safety on PsyCap and innovative behaviours among Malaysia university academics. The model was found to be significant if the confidence interval (CI) without passing through zero (Hayes, 2013).

3.9 Summary

The reasons for choosing the research design, sampling method, and sample size were discussed in the present chapter. This chapter also discussed the characteristics of recruited participants, instruments used, study procedures, and methods of data analysis.

Chapter 4

Results

4.1 Introduction

This chapter presents the results of data cleaning, assumption testing, descriptive statistics, and hypothesis testing.

4.2 Data Cleaning

A total of 10,749 invitation emails were sent to collect the responses from the Malaysian university academics. The response rate was about 2%, with 212 participants opening or answering the survey forms. A preliminary data cleaning process was carried out, where 68 survey responses were filtered and excluded from the study due to incomplete answers. Among them, some participants leave the survey right after the acknowledgment of consent, while others stop answering in between the different sections of the surveys. The presence of missing data was very common in different studies, even when they were well-designed and well-controlled (Graham, 2009). A decision was made to exclude the missing data from further analysis as it can lead to biased results as well as lower the study's statistical power, validity, and representativeness (Kang, 2013). After the data cleaning process, 144 completed responses were used for the next step.

4.2.1 Boxplot, Histogram, and Q-Q plot

The possible outliers of the present study were determined by using boxplots, histograms, and Q-Q plots. Case 87 had been detected as a possible outlier in both the boxplot of PsyCap and the innovative behaviour variables.

With the presence of Case 87, an unusual observation was found that was away from the normal distribution curve of the histogram and the diagonal line of the Q-Q plot in both of the PsyCap and innovative behaviour variables (refer to Appendix F). When removing Case 87, no possible outlier was found in the boxplot of innovative behaviour variables, and a normally distributed bell curve was formed by the data of the PsyCap scale. There is also no longer an obvious point that deviates far away from the diagonal line of the Q-Q plot in both the PsyCap and innovative behaviour variables (refer to Appendix G). After comparing the dataset with and without Case 87, a decision was made to remove it to ensure a more valid and reliable conclusion to the present study. Hence, 143 responses remained in the present study for further analysis.

4.2.2 Cook's Distance, Mahalanobis Distance and Centered Leverage Distance

Cook's distance, Mahalanobis distance, and centred leverage distance were used to identify the possible influential cases in the present study (refer to Appendix H). From the results computed by SPSS (Connolly, 2007), the maximum values of Cook's distance and Mahalanobis distance were 0.106 and 14.541, respectively, which did not exceed the benchmark of 1 and 15. The values indicated that there are no influential cases in the present study that need to be considered for removal.

The leverage's value was calculated by using the formula [(p+1)/n], where p is the number of independent variables and n is the total observed data. The calculation of [(2+1)/143] indicated that the leverage's value for the present study was 0.021. The possible influential cases are those that have more than 2

times (Hoaglin & Welsch, 1978) or 3 times (Stevens, 1992) the leverage's value, which is 0.042 and 0.063, respectively. There are a total of 7 cases that exceeded the value of 0.042, and among them, 3 cases exceeded the value of 0.063. However, a decision was made not to remove any of these cases from the present study as they had not been identified as influential cases in both the Cook's distance and Mahalanobis distances. The 143 responses were retained and proceeded to the next step of data analysis.

4.3 Assumption Testing

4.3.1 Normality Assumption

The skewness and kurtosis values of each variable, which fall in between -2 and +2, indicated that the normality assumption was met (refer to Table 4.1).

Table 4.1

Skewness and Kurtosis Value for Actual Study (n=143)

Scale	Skewness	Kurtosis
Psychological Capital	-.30	.88
Psychological Safety	.35	-.38
Innovative Behaviours	.04	-.29

Histograms and Q-Q plots were also used in the present study to test the normality assumption (refer to Appendix I). The approximately bell-curve-shaped histogram with a symmetric mean indicates that the normality assumption was met (Barton & Peat, 2014). In addition, the Q-Q plot with most of the observed data clustered along the diagonal line indicates the observed and expected data are statistically equal (Mishra et al., 2019). In short, the normality assumption of the present study is met.

4.3.2 Multicollinearity

In the present study, the VIF value is less than 10 and the tolerance value is more than .10 (refer to Table 4.2), indicating that the assumption is not violated.

Table 4.2
VIF and Tolerance Value

		Tolerance	VIF
1	(Constant)		
	PsyCap	.82	1.22
	Psychological Safety	.82	1.22

Dependent Variable: Innovative Behaviours

4.3.3 Independence Errors

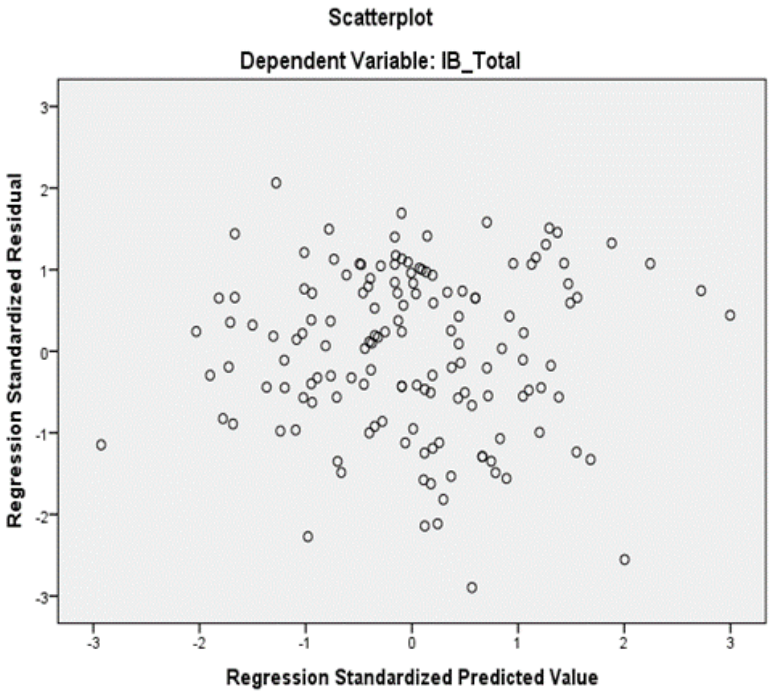
The present study used the Durbin-Watson test to ensure the errors were independent from each variable. The model of PsyCap and psychological safety as independent variables and innovative behaviours as dependent variables showed that the Durbin-Watson value was 2.024. The values fall within the acceptable range of 1.5 and 2.5, indicating that the assumption is not violated.

4.3.4 Residual Normality, Linearity, and Homoscedasticity

A scatterplot was used as the residuals analysis in order to test the assumptions of residual normality, linearity, and homoscedasticity. The scatterplot generated by SPSS (Connolly, 2007) indicated that these assumptions were not violated (refer to Figure 4.1), with an approximate rectangular shape, scores concentrated at about the zero point, and no systematic pattern or cluster group (Field, 2009).

Figure 4.1

Residual Normality, Linearity and Homoscedasticity Assumption – Scatterplot



4.4 Descriptive Statistic

A total of 143 participants' responses were used for analysis in the present study. The number of males and females who responded was not too far apart (male = 45.5%, female = 54.4%), with ages ranging from 25 to 73 (*M* = 40.9, *SD* = 8.78), and Malays make up the majority (43.3%). Among the participants, more than half of them (69.2%) were employed at private universities, and the rest (30.8%) were employed at public universities. The descriptive statistics for the main variables (PsyCap, psychological safety, and innovative behaviours) as well as the demographic variables are shown in Table 4.3 and Table 4.4, respectively.

Table 4.3

Descriptive Statistics for PsyCap, Psychological Safety and Innovative Behaviour

Variable	*M*	*SD*	Range
Psychological Capital	104.22	12.19	69-143
Psychological Safety	33.69	6.434	20-49
Innovative Behaviour	60.45	10.85	32-84

Note. M = Mean, SD = Standard Deviation

4.5 Hypothesis Testing

Multiple linear regression is used to test the eight hypotheses. The results were computed using SPSS (Connolly, 2007), and all eight hypotheses are supported. The summary of results for hypotheses 1 – 7 are shown in Table 4.4.

Table 4.4

Statistical Results for Hypotheses 1 - 7

Hypothesis	Hypothetical Path	B	SE	*t*	*p*
H1	PsyCap → IB	.536	.068	7.291	<.001
H2	Hope → IB	.556	.205	7.729	<.001
H3	Self-efficacy → IB	.541	.196	7.350	<.001
H4	Resilience → IB	.292	.254	3.547	<.001
H5	Optimism → IB	.365	.261	4.516	<.001
H6	PC → PS	.425	.042	5.540	<.001
H7	PS → IB	.416	.136	5.193	<.001

Note. PsyCap = Psychological Capital, IB = Innovative Behaviours, PS = Psychological Safety, SE = Standard Error

The main hypotheses were tested by multiple regression analysis. The control variables entered in the first step included the age, type of universities, and years of working experiences in the field (refer to Table 4.5 and Table 4.6). The results indicated that there is a positive and statistically significant

contribution of PsyCap towards the innovative behaviours among Malaysian university academics (β = .536, *SE* = .068, *t* = 7.291, *p* < .001; ΔR^2 = .278, *p* < .001). H1 was supported. The results also indicated that each dimension of PsyCap (hope, self-efficacy, resilience, and optimism) positively and significantly contributed to the innovative behaviours among Malaysian university academics. H2, H3, H4, and H5 was supported. Hope contributed the most to the innovative behaviour of the academics. The sequence of contribution effects (from high to low) was as follows: hope (β = .556, *SE* = .205, *t* = 7.729, *p* < .001; ΔR^2 = .302, *p* < .001), self-efficacy (β = .541, *SE* = .196, *t* = 7.350, *p* < .001; ΔR^2 = .282, *p* < .001), optimism (β = .365, *SE* = .261, *t* = 4.516, *p* < .001; ΔR^2 = .129, *p* < .001), and resilience (β = .292, *SE* = .254, *t* = 3.547, *p* < .001; ΔR^2 = .084, *p* < .01).

Next, there is a positive and statistically significant contribution of PsyCap towards the individual psychological safety among Malaysian university academics (β = .425, *SE* = .042, *t* = 5.540, *p* < .001; ΔR^2 = .174, *p* < .001). H6 was supported. Result also showed that individual psychological safety positively and significantly contributed to the academics' innovative behaviours academics (β = .416, *SE* = .136, *t* = 5.193, *p* < .00; ΔR^2 = .164, *p* < .001). H7 was supported.

Table 4.5

Regression Results for PsyCap, Psychological Safety and Innovative Behaviours [a]

	Innovative Behaviours		
	β	R^2	ΔR^2
Step 1			
Control Variables[b]		.009	
Step 2			
PsyCap	.536***	.287	.278***
Hope	.556***	.311	.302***
Self-efficacy	.541***	.291	.282***
Resilience	.292**	.093	.084**
Optimism	.365***	.138	.129***

Note. [a] n = 143, [b]Control Variables (age, years of working experiences, type of university), ***$p < .001$, **$p < 0.01$

Table 4.6

Regression Results for PsyCap and Psychological Safety

	Psychological Safety		
	β	R^2	ΔR^2
Step 1			
Control Variables[b]		.051	
Step 2			
PsyCap	.425***	.225	.174***

Note. [a] n = 143, [b]Control Variables (age, years of working experiences, type of university), ***$p < .001$, **$p < 0.01$

Table 4.7

Regression Results for Psychological Safety and Innovative Behaviours [a]

	Innovative Behaviours		
	β	R^2	ΔR^2
Step 1			
Control Variables[b]		.009	
Step 2			
Psychological Safety	.416***	.173	.164***

Note. [a] n = 143, [b]Control Variables (age, years of working experiences, type of university), ***$p < .001$, **$p < 0.01$

The mediation model of the present study was statistically significant with path a of PsyCap on individual psychological safety (β = .231, *SE* = .042, *t* = 5.540, *p* < .001), path b of individual psychological safety on innovative behaviours (β = .382, *SE* = .136, *t* = 2.799, *p* < .01), and path c' of PsyCap on innovative behaviours (β = .407, *SE* = .073, *t* = 5.549, *p* < .001). The indirect effect of PsyCap on innovative behaviours through individual psychological safety was also found to be statistically significant (β= .088, 95% CI [.017, .180]), where CI value did not pass through zero.

The effects decomposition of the path analysis was calculated by the suggested formulas of Alwin and Hauser (1975). They proposed two measures to for the mediation model, which included the ratio of the indirect effect to the total effect,

$$Pm = \frac{ab}{ab + c'} = \frac{ab}{c} = 1 - \frac{c'}{c} = 1 - \frac{.407}{.495} = .178$$

and the ratio of the direct effect to the total effect.

$$1 - Pm = 1 - \frac{ab}{ab + c'} = 1 - \frac{ab}{c} = \frac{c'}{c} = \frac{.407}{.495} = .822$$

Based on the calculation, psychological safety mediated 17.8% of the total effect of PsyCap on innovative behaviours among the Malaysian university academics. H8 was supported. The results of the present study further confirm the mediating effect of psychological safety on the association between

PsyCap's subscale and innovative behaviours (refer to Table 4.8 and Figure 4.2).

The summary of the results is shown in Table 4.9.

Table 4.8
Mediation Analysis Summary

	Total Effect	Direct Effect	Indirect Effect	Confidence Interval for Indirect Effect		Conclusion
				Lower Bound	Upper Bound	
PC→PS→IB	.495***	.407***	.088	.017	.180	Partial Mediation

Note. PC = Psychological Capital, PS = Psychological Safety, IB = Innovative Behaviours, SE = Self-efficacy

Figure 4.2
The Direct and Indirect Effect of the Mediation Model

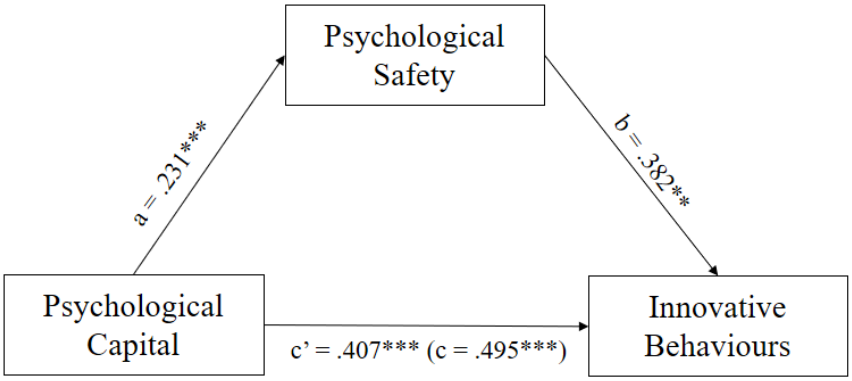


Table 4.9

Summary of Hypothesis

	Hypothesis	Decision
H1	PsyCap significantly and positively contributes to the innovative behaviour among Malaysian university academics.	Supported
H1a	Hope significantly and positively contributes to the innovative behaviour among Malaysian university academics.	Supported
H1b	Self-efficacy significantly and positively contributes to the innovative behaviour among Malaysian university academics.	Supported
H1c	Resilience significantly and positively contributes to the innovative behaviour among Malaysian university academics.	Supported
H1d	Optimism significantly and positively contributes to the innovative behaviour among Malaysian university academics.	Supported
H2	PsyCap significantly and positively contributes to the individual psychological safety among Malaysian university academics.	Supported
H3	Individual psychological safety significantly and positively contributes to innovative behaviour among Malaysian university academics.	Supported
H4	Individual psychological safety significantly mediates the association between PsyCap and innovative behaviour among Malaysian university academics.	Supported

4.6 Summary

After data cleaning, 143 effective data were used for analysis. The data met all the assumptions of the linear regression model, and this chapter clearly explains the result of the data analysis. The results show that all the hypotheses were supported.

Chapter 5

Discussion

5.1 Introduction

This chapter discusses the findings of the present study according to the hypothesis and past literature. The implications, limitations, recommendations, and conclusion of the study were also discussed in this chapter.

5.2 Psychological Capital and Innovative Behaviours

The findings of the present study showed that PsyCap positively contributed to innovative behaviours. The results were consistent with the results of past studies (Alshebami, 2021; Hsu & Chen, 2017; Mutonyi, 2021; Sameer, 2018; Yan et al., 2020). It was proven that the positive PsyCap is able to drive the employees to reach their positive behaviours in the workplace (Alessandri et al., 2018), such as innovative behaviours among Malaysian university academics. This may be because of the ability of PsyCap to supply important psychological resources that can act as protection layers against the employees' daily work-related challenges (Hobfoll, 2001). It can also effectively support their innovative behaviours by increasing their perceived options and enhancing their efforts and willpower to pursue their goals even when faced with challenges or failures (Abbas & Raja, 2015). In other words, Malaysian university academics with a higher level of PsyCap are more likely to have the ability and willingness to seek alternative working methods, even in the midst of COVID-19 pandemics.

In addition, the PsyCap of hope, self-efficacy, optimism, and resilience are the sources of the individuals' positive emotions (Avey et al., 2008; Avey

et al., 2011), which help expand the thought-action supply and are portrayed by innovative behaviours. In other words, PsyCap act as an extra psychological source that allow Malaysian university academics to further implement their creativity (thought) into innovative behaviours (action). Malaysian university academics with a higher level of PsyCap are more likely to maintain a positive mental state not only in the period of COVID-19 pandemics or endemics but also when dealing with the massive change of technologies, and therefore can have extra psychological resources to find innovative ways to deal with the new work mode and solve problems. The PsyCap may also represent the positive attitudes of the employees, which drive them to pick tasks with more challenges and innovation, utilise their determination to achieve targets, not be scared of failure and difficulties, speedily bounce back from setbacks, and review and sum up their experiences (Li et al., 2023). These are able to set a firm foundation and provide a great resource for Malaysian university academics to carry out innovative behaviours when facing sudden changes, such as the outbreak of COVID-19, and also incremental changes, such as the shift to the technology era, as mentioned in the Malaysian Education Blueprint 2015–2025 (Ministry of Higher Education, 2015).

5.3 Psychological Capital's Dimensions and Innovative Behaviours

All of the PsyCap's dimensions (hope, self-efficacy, resilience, and optimism) were found to have significant and positive contributions towards innovative behaviours. It was found that hope provided the greatest contribution effect towards Malaysian university academics' innovative behaviours, which were similar to the study of Sameer (2018). However, the results were quite different from the study of Milner and Criticos (2023) as well as Nwanzu and

Babalola (2019), which found that hope did not provide a significant and positive contribution to the innovative behaviours of employees. In addition, the results are inconsistent with the claim that hope, self-efficacy, resilience, and optimism interact with each other, constitute the PsyCap as a whole with higher resources, and can provide a significantly greater predictive effect than when taken separately (Luthans & Youssef-Morgan, 2017), especially when predicting job-related outcomes (Sweetman et al., 2011).

5.3.1 Hope and Innovative Behaviours

In the present study, the contribution effect of hope goes beyond the higher order of PsyCap constructs that were supposed to provide the greatest contribution effect to the academics' innovative behaviours. The results may be due to the outbreak of COVID-19, which had a significant impact on the education system not only in Malaysia but also around the world (UNESCO, 2020), with the modification of class delivery, student assessment, evaluation of results, and the start of the semester (Pujari, 2020). The early stages of COVID-19 exposed people to plenty of stress due to the unknown virus and risk of contagion (Flesia et al., 2023) and hence also influenced people’s thoughts and expectations for their future lives (Zuo et al., 2021). As Freire (2014) mentioned, hope cannot exist in the absence of challenges. Previous studies agreed that hope is able to serve as a protective factor (Satici, 2016) in conditions of huge uncertainty (Lazarus, 1999). The COVID-19 condition, which can be said to be a special stressor incomparable to any former dreadful events (Morganstein & Ursano, 2020), makes hope more important than ever. In other words, it may be the uncertainty in the environment that acts as the

emotional stimulus that triggers the critical role of hope (Snyder, 2000) among academics in the present study.

Hope is a source of individuals' psychological strength to face difficult life events and regain a sense of control over life (Young, 2017), and it can act as a powerful reaction towards fear (Pain & Smith, 2012). A hopeful academic may tend to have a more positive outlook on life (Ahorsu et al., 2022) and have a more positive attitude even when viewing the occurrence of the COVID-19 outbreak (Long et al., 2020). They tend not to be trapped in the frustration condition and instead actively find innovative ways to make the difficulties better (Muyan-Yılık & Demir, 2020). Hence, these may explain the greatest contribution effect of hope, which not only leads from the rest of the other PsyCap dimensions (self-efficacy, resilience, and optimism), but also the whole PsyCap, towards the innovative behaviours among Malaysian university academics after the outbreak of COVID-19 diseases

In addition, hopeful individuals value goal achievement (Shalley & Gilson, 2004), and this may support them in utilising goal-directed thoughts to achieve their objectives (Snyder, 2002). They also tend to find adaptive and innovative behaviours to solve problems (Uppathampracha & Anwar, 2023; Zhou & George, 2003) due to their ability to generate more feasible and realistic action plans to reach their goals (Chaiken et al., 2008). In other words, academics with a higher level of hope valued their goals of being able to continue their duties during the COVID-19 lockdown period and were hence more likely to carry out innovative behaviours to ensure their work could still be done effectively and efficiently.

5.3.2 Self-efficacy and Innovative Behaviours

Among the four dimensions of PsyCap, self-efficacy had a second significant impact on the academics' innovative behaviours. The contribution effect of self-efficacy on innovative behaviours was congruent with the studies' results of Karmila et al. (2020), Milner and Criticos (2023), and Sameer (2018). This indicated that the higher the self-efficacy level of the academics, the higher the possibility that they may carry out innovative behaviours. According to Farmer et al. (2003), one risk associated with innovative performance is the potential for self-esteem loss in the event of failure. The researchers claimed that people with lower levels of self-efficacy may be more vulnerable to such risks, tend to play it safe, and hence restrict their possible innovation process.

Another possible explanation for the contribution effect on innovative behaviours may be the reason of conformity, where the employees seek acceptance in their working team and are careful in introducing controversial ideas to prevent negative judgement (Thompson, 2003). Employees with low levels of self-efficacy may tend to devalue their novel ideas, view them as not important, and view them as unlikely to be accepted by others, thus preventing them from successfully implementing the innovative behaviours (Baer, 2012). Only employees with a higher level of self-efficacy may have more motivational and cognitive resourcefulness (Yu et al., 2019), be more ready to face any potential judgmental resistance to their novel ideas (McGuire, 2014), be willing to take risks (Shane et al., 2003), and have confidence in using innovative strategies to achieve their goals (Duyar et al., 2015).

5.3.3 Resilience and Innovative Behaviours

The present study concluded that resilience positively and significantly contributed to the academics' innovative behaviours, and the result was consistent with some of the past literature (Damayanti & Kurniawan, 2023; Sameer, 2018; Senbeto & Hon, 2020). This may be because, in the process of innovation, the employees may face challenges such as rejection or negative judgement from their superiors or colleagues (Amir, 2015; Damayanti & Kurniawan, 2023). This process of implementing innovative behaviours that were filled with difficulties and failures required employees to have a higher level of resilience to bounce back from the challenges and keep going to achieve the targets (Sameer, 2018). The resilient employees are able to understand that overcoming the obstacles and dealing with the challenges can help them grow, and they are more likely to find solutions for them (Maddi, 2013). In other words, the resilience among the employees encourages their innovative behaviours by enabling them to persevere, bounce back, and continue to have innovative behaviours despite the potential challenges.

The flexibility among resilient academics may be another explanation of the contribution of resilience to innovative behaviours. Those employees with a higher level of resilience have the flexibility to tackle change and innovation (Matzenberger, 2013). Their resiliency enhances their stamina for problem solving, encourages them to generate better ways to deal with the challenges, readjust to the circumstances, and open up new chances (Xu et al., 2021), and hence promotes their innovative behaviours. The study of Xu et al. (2022) concluded that highly resilient college students are able to react to specific challenging pandemic-related situations and bounce back from them by

using their flexible mindset and exhibiting innovation. Masten and Reed (2002) also agreed that resilient employees are more likely to effectively use their resources (e.g., social, cognitive, or financial) to lessen the risk factors that may escalate setbacks. Hence, the resilient academics in the present study may have the mental toughness and flexibility to mobilise their available resources, which support their innovative behaviours even in the face of challenges such as the COVID-19 outbreak and changes in working methods.

5.3.4 Optimism and Innovative Behaviours

Similar to past studies (Li & Wu, 2011; Nwanzu & Babalola, 2019; Sameer, 2018), the present study concluded that optimism makes a positive and significant contribution to innovative behaviours. As mentioned before, being innovative in work performance may cause employees to face different challenges (Amir, 2015; Damayanti & Kurniawan, 2023). However, the optimist employees may still be willing to go through it as they are able to see chances in every challenge (Hmieleski & Baron, 2009), be more optimistic that their endeavour can be successful and the challenges in the future can be settled, as well as be able to keep distance between themselves and negative life circumstances (Rego et al., 2018).

When the innovative behaviours of the optimist employees are failing or receiving negative feedback, they are less likely to blame themselves and become frustrated (Rego et al., 2018). Instead, they are able to regulate their emotions, actively find alternative ways, and be optimistic that good results can finally always happen to them (Scheier & Carver, 1985; Youssef & Luthans, 2007). These positive mindsets in optimist employees are able to reinforce their

self-esteem and spirit to continue supporting their creativity (Lyubomirsky et al., 2006), be open to exploring fresh options (Kaufmann, 2015), and hence lead to the implementation of innovative behaviours.

5.4 Psychological Capital and Individual Psychological Safety

The present study supports the sixth hypothesis. Similar to the study of Sun and Huang (2019), the present study found that PsyCap positively and significantly contributes to individual psychological safety among Malaysian university academics. It is believed that individuals with a higher level of PsyCap are more likely to have a more positive and strong perception of the available resources, the probability of success, and the ability to achieve goals (Luthans et al., 2007). This tendency may encourage the high PsyCap's academics to evaluate the environment more positively, which in turn enhances their level of psychological safety.

There was a study that mentioned that PsyCap is positively correlated to individuals' sense of security (Eweida et al., 2021). In similar circumstances, individuals with a higher level of PsyCap tend to feel more secure than those with a lower level (Alat et al., 2023; Valdersnes et al., 2017). This is because the positive mental state, PsyCap, can help buffer an individual's fear, stress, and anxiety when facing threats or uncertainty (Laurence & Kim, 2021), which can also enhance their sense of security (Kan & Yu, 2016).

5.5 Individual Psychological Safety and Innovative Behaviours

The seventh hypothesis was supported, and the results of the present study were congruent with past studies (Agarwal & Farndale, 2017; Andersson et al., 2020; Cao & Zhang, 2020; Liu & Ge, 2020). Employees with a higher

level of psychological safety are more likely to feel a sense of security towards their work environment and carry out innovative behaviours (Edmondson, 1999). This may be because innovative behaviours are unusual and risky work behaviours that require the employees to challenge the traditional working method as well as the status quo and propose something novel (AlEssa & Durugbo, 2021; Elsayed et al., 2023). Employees with a high level of psychological safety are less likely to worry about being blamed or negatively judged by others at work, which encourages them to propose innovative ideas (Liang & Fan, 2020). When the employees feel safe, they also tend to be equipped with the required energy level and are motivated to deal with the anxiety triggered by ambiguity (Kark & Carmeli, 2009) when committing to explore innovative behaviours.

Individual psychological safety also has an effect on the employees' evaluation of whether they can communicate with their colleagues without fear (Liang et al., 2012). When employees feel psychologically safe and comfortable communicating with their colleagues, they are more likely to be actively engaged in understanding and accepting each other's viewpoints (Edmondson, 2018). They need not worry about the possible negative aftermaths on the interpersonal relationship (Edmondson & Lei, 2014) and be less defensive to seek and handle feedback in a proper manner (Javed et al., 2017). This open-minded attitude towards exchanging different opinions, knowledge, and expertise may in turn further foster the generation of innovative behaviours, especially when the academics are facing not only their superiors but also their colleagues and students.

5.6 Mediating Effect of Individual Psychological Safety

The results of the present study supported the eighth hypothesis and are congruent with the study results of Sun and Huang (2019). There are many different potential factors that may influence one's expression of innovative behaviours. The present study suggested that PsyCap of hope, self-efficacy, resilience, and optimism can contribute to innovative behaviours among Malaysian university academics, and the relationship is mediated by the academics' psychological safety.

Hasanefend et al. (2017) agreed that it is insufficient to only use and consider a single set of aspects to reflect academics' willingness to engage in innovative behaviours in the educational system. For instance, different academics may have different levels of acceptance and responses towards the different possible external influences within their institution (Degn, 2018), which can in turn influence their level of psychological safety to engage in innovative behaviours. As social cognitive theory (Bandura, 1986) suggested, behaviours were determined not only by personal characteristics but were also highly related to the environment. A positive attitude among the academics may be one of the most important aspects of their innovative behaviour implementation, but "usual creative" employees may not express their innovativeness simply because they feel uncomfortable or insecure working in a socially complex environment (Brockhus et al., 2014). In other words, although employees with high PsyCap are more likely to behave innovatively, the psychological safety of employees, which can be directly affected by the work environment, also plays a significant role in determining the implementation of academics' innovative behaviours.

There are potential risks that may force the academics to encounter stressful situations in order to carry out innovative behaviours, such as the probability of failure (Yuan & Woodman, 2010), having doubts about their own abilities, influencing colleagues' trust (Gkontelos et al., 2023), being time-consuming, and receiving objections from superiors (George & Zhou, 2007). However, academics who have a higher level of PsyCap still tend to take the risk of having innovative behaviours, as PsyCap can act as personal resources that can hinder them from harmful stress (Luthans et al., 2011) and enhance their level of psychological safety in the working environment. In other words, PsyCap supplied adequate psychological support for the employees to feel safe to carry out the innovative behaviours despite knowing the possible stresses and risks (Abbas & Raja, 2015). Hobfoll (1989) claimed that people always struggle to get and reserve their own valuable resources, they tend not to take risks for unusual behaviours if they feel the resources are insufficient and may choose to reserve them for future use. However, academics with a high and adequate level of psychological resources (PsyCap) tend not to feel the threat of losing their valuable resources and may have a higher level of psychological safety to go beyond their routines for innovative working methods. Even in the face of the COVID-19 pandemic, they are still able to draw upon their psychological resources, are more sensitive to organisational support and resources (Yan et al., 2020), and feel safer carrying out innovative behaviours.

In addition, the formation of innovative behaviours may require the collaboration of employees to merge their different knowledge and experiences (Leenders et al., 2016). Flath et al. (2017) also agreed that innovation does not occur in isolation but comes from the different parties' shared information and

prior experiences in the system. Academics, in this case, are said to be more likely to generate innovative working methods when they can feel secure discussing their ideas with their superiors, colleagues, or even students. When academics are open to sharing and discussing their creative ideas with others, the feedback from other parties can also help improve the ideas (Dewett, 2004). Academics with a high level of PsyCap who also feel safe discussing ideas with others are more likely to view the feedback or discussion from a constructive and positive perspective (Yan et al., 2020). Their attention is directed towards improving their creative ideas and turning them into realistic, innovative solutions (Mura et al., 2013). In other words, academics with a high level of PsyCap have enough psychological resources to feel safe to voice out, interact, and exchange ideas with others, and this ease of acquiring, sharing, and utilising knowledge may further generate their innovative behaviours in work (Obeidat et al., 2016).

In short, the present hypothesis concluded that academics with a higher level of PsyCap have more psychological resources and support for them not only to feel safe to have risky innovative behaviours, but also to enhance their sense of psychological safety to share, exchange, and optimise their creative ideas and finally come out with more innovative behaviours in their job.

5.7 Implications

5.7.1 Theoretical Implication

The present study first looked into the effect of academics' personal factors (PsyCap) on their innovative behaviours under COVID-19 influence. The results reconfirmed that PsyCap of hope, self-efficacy, resilience, and

optimism can contribute to the academics' innovative behaviours. Before this, Luthans et al. (2007), as well as Luthans and Youssef-Morgan (2017), claimed that the constitution of the four dimensions as a whole (namely, PsyCap) is a higher construct order that provides higher resources and predictive effects. Sweetman et al. (2011) also agreed with the claim and highlighted that the effect can be more powerful when used to predict outcomes related to jobs. While some researchers stick to this claim and use PsyCap variables as a whole to conduct their studies (Alessandri et al., 2018; Alshebami, 2021; Mutonyi, 2021), some still proceed to study the separate effects of each dimension and get inconsistent results (Milner & Criticos, 2023; Nwanzu & Babalola, 2019; Sameer, 2018). The present study provides insight into the inconsistency of the literature by figuring out that the contribution effect of hope on innovative behaviours exceeds the PsyCap as a whole through the lens of COVID-19 influence and in the context of Malaysian universities.

Secondly, the present study has proven the contribution effect of PsyCap as a personal factor on psychological safety among academics. It is notable that the influence of individual factors on individual psychological safety was limited (Chen et al., 2015), and the present study responded to the call of Kahn (1990) to explore on it. The results of the present study filled in the research gap by proposing the PsyCap as one of the possible individual-level contribution factor of employees' psychological safety in the work environment. In addition, while most of the studies focused on the students' psychological safety (Ayub et al., 2022; Tu, 2021; McLeod & Gupta, 2023; Korneeva et al., 2022), the present study investigated the psychological safety of academics which had received inadequate attention. The present study contributed to the existing

knowledge about psychological safety of academics, which may value further investigation especially with the present of COVID-19 endemic, together with the global trend which demand them to have expanded roles.

By using the framework of social cognitive theory (Bandura, 1986), the present study extended the research to incorporate individual psychological safety as the mediator between the academics' PsyCap and innovative behaviours. Through the lens of social cognitive theory (1986), multiple perspectives of the process of innovative behaviours were being investigated, from the academics' PsyCap to their psychological safety, which related not only to their personal psychological resources but also the work environment. Results indicated that PsyCap as a personal resource can have an effect on the academics' perception of the environment in terms of psychological safety and finally determine their implementation of innovative behaviours. By including individual psychological safety as a mediator, the present study makes a contribution to answering the previous call of Luthans et al. (2005) to study the possible mediators of PsyCap and innovative behaviours. The present study also builds on the efforts of Sun and Huang's (2019) study by investigating the relationship between PsyCap, individual psychological safety, and innovative behaviours among academics not only in one public university but also in private universities in Malaysia.

5.7.2 Practical Implications

The dynamic environment, technological developments, and constantly changing world nowadays create many challenges for an organisation (Yu et al., 2019). Hence, the creativity and innovative behaviours of employees became a

key factor in enhancing an organisation's competitiveness (Jo, 2019). The present study focuses on the psychological abilities (PsyCap) of employees, which are "state-like", measurable, and open to development (Luthans & Youssef, 2004). By understanding the key role of the PsyCap's contribution to the academics' innovative behaviours, the management and policymakers of both public and private higher education institutions in Malaysia can gain insights on how to enhance the employees' innovative behaviours. For example, training and activities can be provided to the academics to enhance their level of hope, self-efficacy, resilience, and optimism. The result of the present study further highlighted the significant role of hope in the academics' innovative behaviours under the influence of COVID-19. Hence, more energy and time can be considered to be diverted to this aspect in order for the organisation to achieve an optimised return on investment. By doing so, the organisation's competitiveness and continuous survival may be ensured, and the final goals of the organisation may also be achieved more effectively (Lee & Yoo, 2019).

From the present study, the management of the organisations can also figure out more comprehensively about the influencers of employees' innovative behaviours that can finally excel organisational performance. Apart from the psychological resources (PsyCap) of employees themselves, it can be concluded that psychological safety among academics in the working environment is also important for their implementation of innovative behaviours. A working environment that can provide a sense of security for academics to openly communicate with others about their ideas should also be cultivated. The managers can incorporate some supportive activities into the

day-to-day work to encourage constructive communication among the work group.

A fair rewards system or key performance indicator that is based on the academics' innovative performance can also help in encouraging and retaining their innovative behaviours. By having these cultures that valued innovation, academics may also be more likely to feel safe in making efforts on their innovative work. In addition, Mutonyi (2021) also agreed that employees in the same organisation may not have the same perceptions about the workplace's culture and practices. Hence, time can be invested to understand the employees' personalities to have a better understand their values and stand for PsyCap (hope, efficacy, self-resilience, and optimism), psychological safety, and innovative behaviours. In short, organisational change may also be something that should be considered in some higher learning institutions that practise conventional work cultures and the workplace must adopt a culture that encourages innovation.

The result of the present study highlighted the contribution of the academics' PsyCap and psychological safety to their innovative work performance. These results can inform the manager about where to focus in order to enhance the present academics' innovative behaviours and also provide some guidelines for the recruitment of new employees. The recruitment process, which is one of the most crucial activities for an organisation's survival and development (Vardarlıer et al., 2014), always requires the manager or human resources officer to evaluate the potential of the candidates (Turner, 2017). Additional selection criteria in terms of the candidates' relevant psychological state, such as their PsyCap and psychological safety, as well as their current

level of innovation, can be added to the recruiting and hiring processes to help in making the final hiring decision. This may increase the probability of the relevant parties choosing the most competitive candidates that can contribute to the long-term goals of the organisation and decrease the chance of inappropriate hiring that may induce indirect costs to the company.

The present study can raise awareness about the importance of being innovative for those working in the educational field. It highlighted the crucial role of innovative behaviours in academics' work under the influence of the COVID-19 outbreak that pushed forward the use of innovative teaching, the fourth industrial revolution that highlighted the Internet of Things (IoT), and the Malaysian Education Blueprint 2015–2025 that committed to digitalizing the higher educational sectors. From enhancing the individual's competitiveness to the organisational competitiveness, especially in the universities that are the most widespread and important social organisations, innovative behaviours may play a significant role in improving the function and effectiveness of other educational organisations as well (Sergeeva et al., 2019). It is believed that universities with high quality and competitiveness can be created by having innovative academics, and more important human assets can be cultivated to contribute to the country's social, economic, and technological development.

5.8 Limitations and Recommendation

The present study focused on the specific target participants, which are white-collar academics. However, the necessity of being innovative in the workplace may not only apply to higher education institutions but also to many other career fields. There may be a doubt as to whether PsyCap and individual

psychological safety have a key contribution effect on innovative behaviours in other industries, especially when considering blue-collar workers, who experience more physical fatigue (Aryal et al. 2017) as compared to academics. In the future, more studies about PsyCap, individual psychological safety, and employees' innovative behaviours can be done in different industries to confirm the results. Apart from that, the present study was being done in an Asian country, which may have a large cultural distinction with Western countries (Talhelm et al., 2014). Employees from individualistic Western countries are more likely to express themselves freely, while those from collectivistic Asian countries focus on loss prevention (Markus & Kitayama, 1991). These may have influences on the contribution effect of the employees' PsyCap and individual psychological safety on their implementation of innovative behaviours. Therefore, the cross-cultural validity of the results has to be reconfirmed by conducting the study in some other Western countries.

Secondly, the non-random sampling method used in the present study may not be able to represent the whole population of Malaysian universities' academics. According to Speklé and Widener (2018), studies using non-random sampling methods are just to test a theory and gain some theoretical knowledge. Therefore, it is suggested that future studies use a more stringent random sampling method to further increase the results' internal validity and generalisability. In addition, a cross-sectional research design was used in the present study. Because the responses are only collected once at a time, this research design may lack a clear chronology of causes and effects, making it impossible to draw a conclusion about the causal relationship (Cummings, 2017) between the academics' PsyCap, psychological safety, and innovative

behaviours. The future study can use a longitudinal research design to obtain causal information about the variables among university academics or other industry employees. The data from the respondents is to be collected for more than one-time point in the longitudinal research design, which can allow the researchers to identify the differences across time (Sedgwick, 2014).

The present study used a self-reported questionnaire that was sent to potential participants by email during the peak of COVID-19 influence. This method increased the difficulty of getting responses from the academics. As mentioned by Polit and Beck (2014), mailed surveys often have a lower response rate than face-to-face surveys. There are also problems such as missing data, where the respondents did not fully answer the data (Connelly, 2016). Moreover, the influence of COVID-19 had been gradually decreasing while the process of thesis writing was coming to an end. It is suggested that a similar study can be done at the endemic phase of COVID-19 by using other strategies, such as approaching the participants physically to distribute questionnaires, and this may result in a higher response rate and further reflect the current situation.

In addition, social desirability bias may be a limitation of solely using self-reported questionnaires, as the respondents may alter their responses to cater to social norms (Nederhof, 1985). The respondent may give responses that are inconsistent with their actual behaviours and attitudes for looking better to others and feeling better about themselves (Larson, 2019). As a result, the validity and reliability of the results may be influenced when the respondents fail to provide accurate responses (Demetriou et al., 2015). Hence, it is suggested to reassure the participants on the anonymous side of the surveys (Fernandes & Randall, 1992), and multi-raters (e.g., supervisors, colleagues, or

students) can be recruited to obtain a wider perspective and a more accurate level of employees' innovative behaviours.

5.9 Conclusion

In conclusion, the results of the present study suggested that academics' PsyCap can positively contribute to their psychological safety and innovative behaviours as it can supply adequate psychological resources for the academics to feel safe in the work environment, to express and discuss their creative ideas with others, and to perceive little threats to carry out the risky innovative behaviours in work. When considering the separate effect of PsyCap, it was found that hope had the greatest effect on the academics' innovative behaviours under the influence of COVID-19 disease. Individual psychological safety also contributes to the academics' innovative behaviours, as this sense of security enables them to not worry about the negative judgements and criticisms from others that may jeopardise their valuable psychological resources. Through the lens of social cognitive theory (Bandura, 1986), the present study also revealed that psychological safety, which is an environment-related variable, plays a mediation role in the relationship between PsyCap (an individual variable) and innovative behaviours (an individual behaviour variable).

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Appendix A

Ethical Approval Letter

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/270/2021

16 November 2021

Dr Chie Qiu Ting
Department of Psychology and Counselling
Faculty of Arts and Social Science
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak

Dear Dr Chie,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your research project (Master student's project) and are pleased to inform you that your application has been approved under Expedited Review.

The details of your research project are as follows:

Research Title	Psychological Capital (PsyCap) and Innovative Behaviours in Malaysian University Lecturers: The Mediating Effect of Psychological Safety
Investigator(s)	Dr Chie Qiu Ting T'ng Soo Ting Youn Jia Xin (UTAR Postgraduate Student)
Research Area	Social Sciences
Research Location	Online Study
No of Participants	200 participants (Age: 18 - 60)
Research Costs	Self-funded
Approval Validity	16 November 2021 - 15 November 2022

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research,

(2) Confidentiality of participants' personal data must be maintained,

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines; and

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 **Fax**: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 **Fax**: (603) 9019 8868
Website: www.utar.edu.my

Figure A1. Ethical approval letter from the ethics committees (Part 1)

Should you collect personal data of participants in your study, please have the participants sign the attached Personal Data Protection Statement for your records.

The University wishes you all the best in your research.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

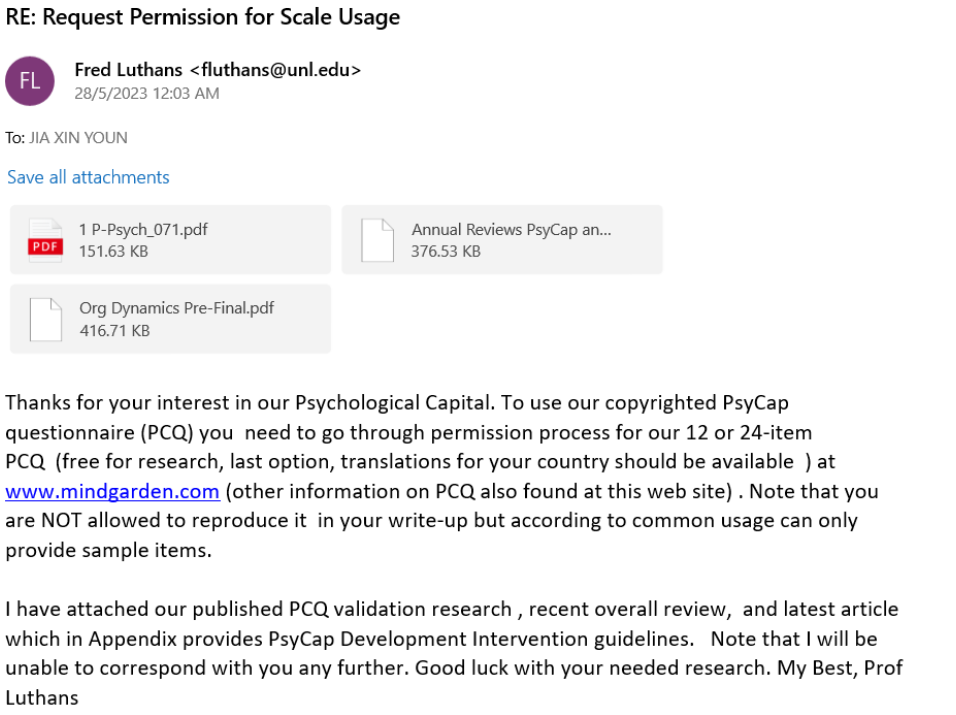
c.c Dean, Faculty of Arts and Social Science
Director, Institute of Postgraduate Studies and Research

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 **Fax**: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 **Fax**: (603) 9019 8868
Website: www.utar.edu.my

Figure A2. Ethical approval letter from the ethics committees (Part 2)

Appendix B

Evidences for Permission of Scale Usage



RE: Request Permission for Scale Usage

FL Fred Luthans <fluthans@unl.edu>
28/5/2023 12:03 AM

To: JIA XIN YOUN

Save all attachments

1 P-Psych_071.pdf
151.63 KB

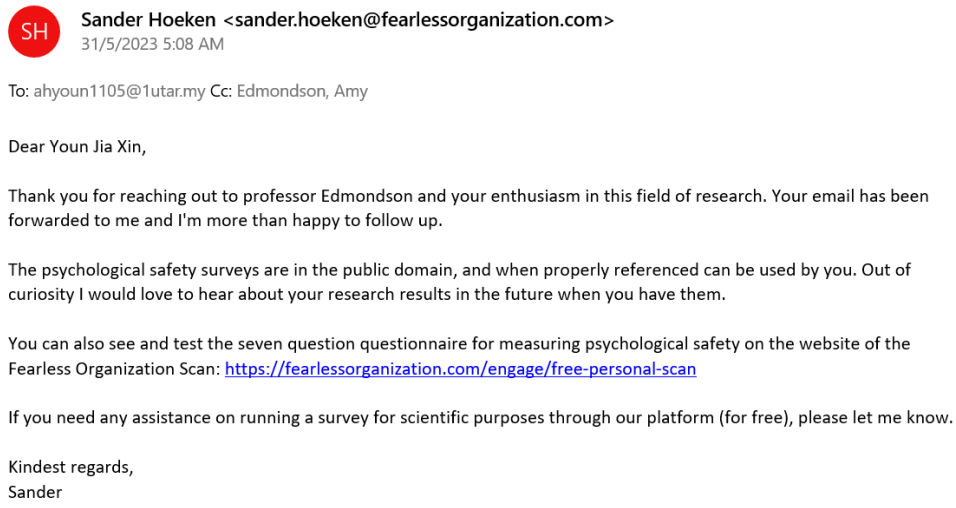
Annual Reviews PsyCap an...
376.53 KB

Org Dynamics Pre-Final.pdf
416.71 KB

Thanks for your interest in our Psychological Capital. To use our copyrighted PsyCap questionnaire (PCQ) you need to go through permission process for our 12 or 24-item PCQ (free for research, last option, translations for your country should be available) at www.mindgarden.com (other information on PCQ also found at this web site) . Note that you are NOT allowed to reproduce it in your write-up but according to common usage can only provide sample items.

I have attached our published PCQ validation research , recent overall review, and latest article which in Appendix provides PsyCap Development Intervention guidelines. Note that I will be unable to correspond with you any further. Good luck with your needed research. My Best, Prof Luthans

Figure B1. Replied email of Psychological Capital Questionnaire-24's author.



SH Sander Hoeken <sander.hoeken@fearlessorganization.com>
31/5/2023 5:08 AM

To: ahyoun1105@1utar.my Cc: Edmondson, Amy

Dear Youn Jia Xin,

Thank you for reaching out to professor Edmondson and your enthusiasm in this field of research. Your email has been forwarded to me and I'm more than happy to follow up.

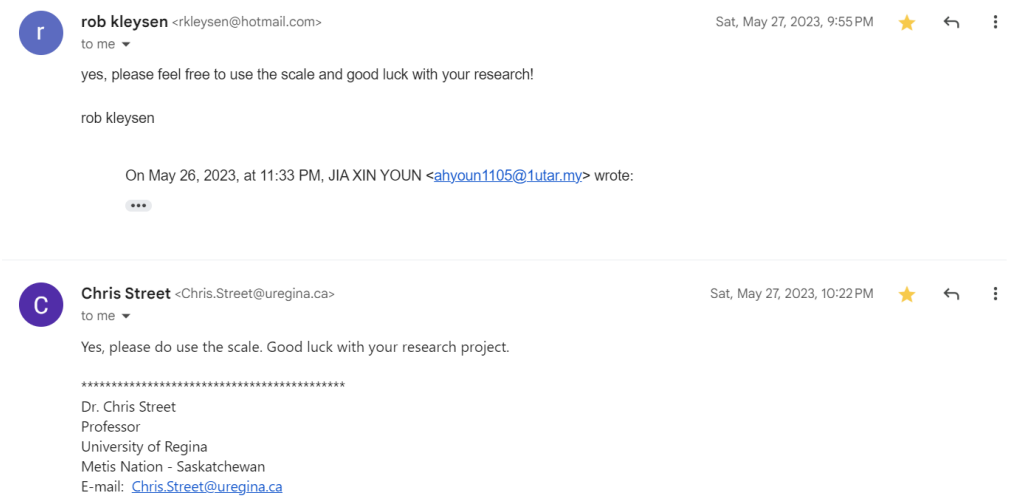
The psychological safety surveys are in the public domain, and when properly referenced can be used by you. Out of curiosity I would love to hear about your research results in the future when you have them.

You can also see and test the seven question questionnaire for measuring psychological safety on the website of the Fearless Organization Scan: https://fearlessorganization.com/engage/free-personal-scan

If you need any assistance on running a survey for scientific purposes through our platform (for free), please let me know.

Kindest regards,
Sander

Figure B2. Replied email of Psychological Safety scale's author.



rob kleysen <rkleysen@hotmail.com> Sat, May 27, 2023, 9:55 PM

to me

yes, please feel free to use the scale and good luck with your research!

rob kleysen

On May 26, 2023, at 11:33 PM, JIA XIN YOUN <ahyoun1105@1utar.my> wrote:

•••

Chris Street <Chris.Street@uregina.ca> Sat, May 27, 2023, 10:22 PM

to me

Yes, please do use the scale. Good luck with your research project.

****

Dr. Chris Street
Professor
University of Regina
Metis Nation - Saskatchewan
E-mail: Chris.Street@uregina.ca

Figure B3. Replied email of the Innovative Behaviours Scale's authors.

Appendix C

Psychological Safety Scale

Below are statements that describe how you may think about your working team. Please use the following scales to indicate your level of agreement or disagreement with each statement.

Very Inaccurate	Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Accurate	Very Accurate
1	**2**	**3**	**4**	**5**	**6**	**7**

1.	If you make a mistake on this team, it is often held against you.	1	2	3	4	5	6	7
2.	Members of this team are able to bring up problems and tough issues.	1	2	3	4	5	6	7
3.	People on this team sometimes reject others for being different.	1	2	3	4	5	6	7
4.	It is safe to take a risk on this team.	1	2	3	4	5	6	7
5.	It is difficult to ask other members of this team for help.	1	2	3	4	5	6	7
6.	No one on this team would deliberately act in a way that undermines my efforts.	1	2	3	4	5	6	7
7.	Working with members of this team, my unique skills and talents are valued and utilized.	1	2	3	4	5	6	7

Appendix D

Innovative Behaviours Scale

Please use the following scales to indicate how often do you…

Never	Almost Never	Sometimes	Fairly Often	Very Often	Always
1	2	3	4	5	6

How often do you…

1.	look for opportunities to improve an existing process, technology, product, service or work relationship?	1	2	3	4	5	6
2.	recognize opportunities to make a positive difference in your work, department, organization, or with customers?	1	2	3	4	5	6
3.	pay attention to non-routine issues in your work, department, organization, or the market place?	1	2	3	4	5	6
4.	generate ideas or solutions to address problems?	1	2	3	4	5	6
5.	define problems more broadly in order to gain greater insight into them?	1	2	3	4	5	6
6.	experiment with new ideas and solutions?	1	2	3	4	5	6
7.	test-out ideas or solutions to address unmet needs?	1	2	3	4	5	6
8.	evaluate the strengths and weakness of new ideas?	1	2	3	4	5	6
9.	try to persuade others of the importance of a new idea or solution?	1	2	3	4	5	6
10.	push ideas forward so that they have a chance to become implemented?	1	2	3	4	5	6
11.	take the risk to support new ideas?	1	2	3	4	5	6
12.	implement changes that seem to be beneficial?	1	2	3	4	5	6
13.	work the bugs out of new approaches when applying them to an existing process, technology, product or service?	1	2	3	4	5	6
14.	incorporate new ideas for improving an existing process, technology, product or service into daily routines?	1	2	3	4	5	6

Appendix E

Demographic Information

Please fill in your personal details or circle **ONE** option.

a.) Age: _____

b.) Sex: 1. Male
2. Female

c.) Race: 1. Malay 3. Indian
2. Chinese 4. Others. (*Specify:* _____)

d.) Physical work environment (past 3 months):
1. Home
2. Office
3. Mixture of both occasionally
4. Others. (*Specify:* _____)

e.) Highest Educational Level (completed): _____

f.) Type of higher educational institutions: 1. Private 2. Public

g.) Year(s) of experience in academic field: _____

h.) Year(s) of servicing in the current employment: ____

i.) Position: _____

Appendix F

Outlier Detection – Boxplot, Histogram, and Q-Q plot (with Case 87)

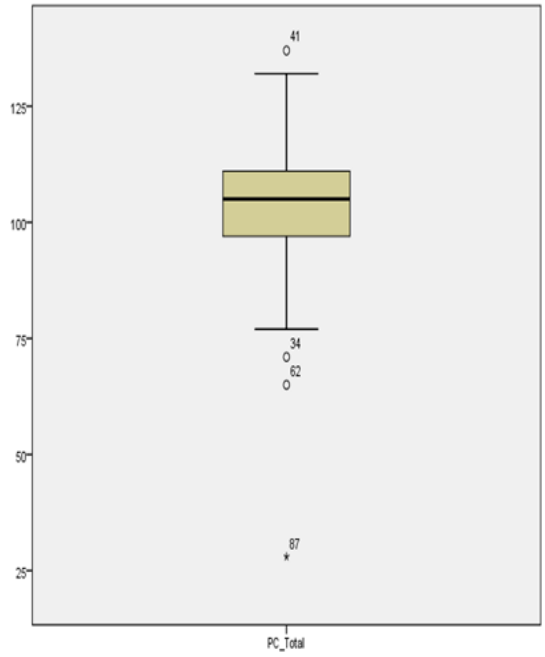


Figure F1. Boxplot of PsyCap data with case 87.

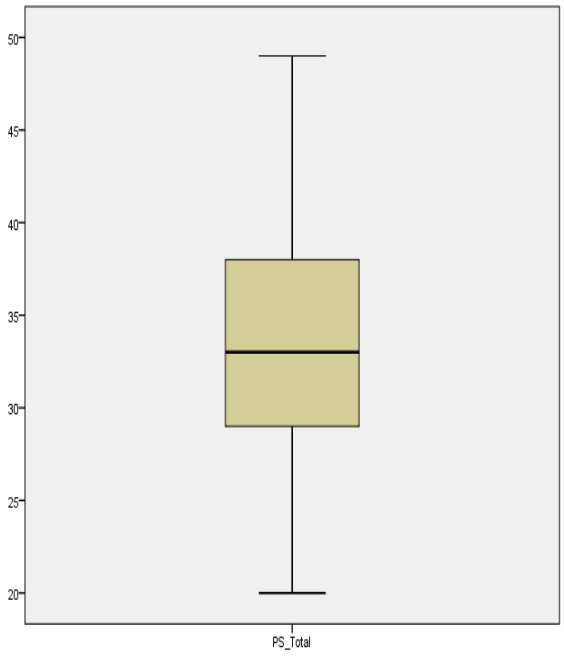


Figure F2. Boxplot of psychological safety data with case 87.

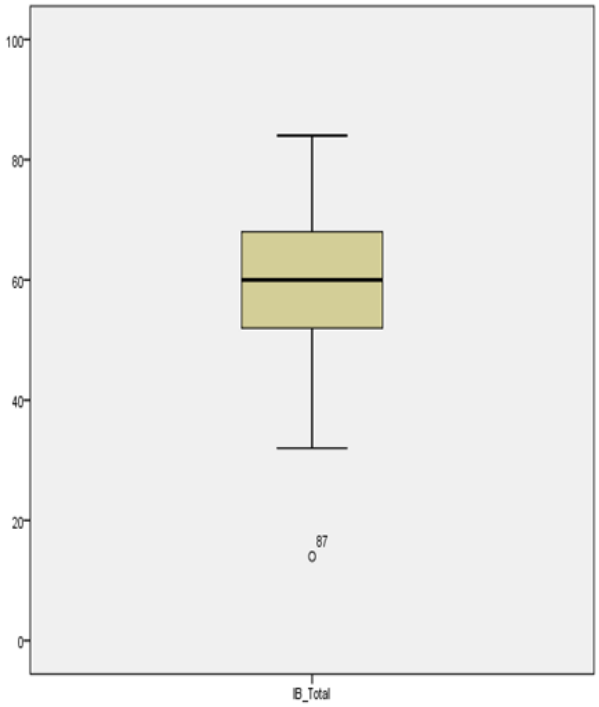


Figure F3. Boxplot of innovative behaviours data with case 87.

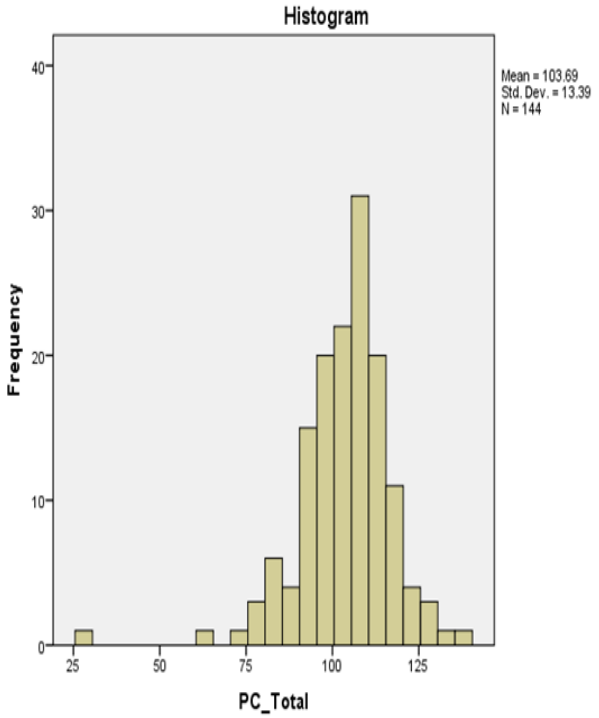


Figure F4. Histogram of PsyCap data with case 87.

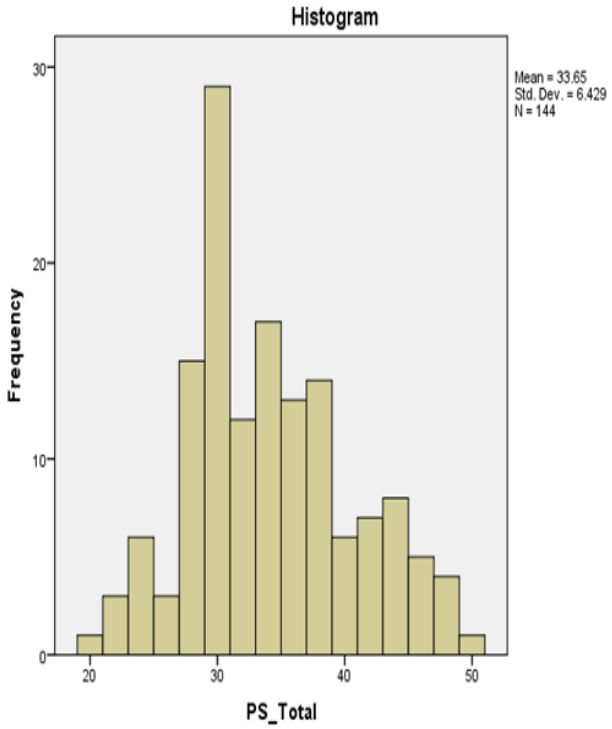


Figure F5. Histogram of psychological safey data with case 87.

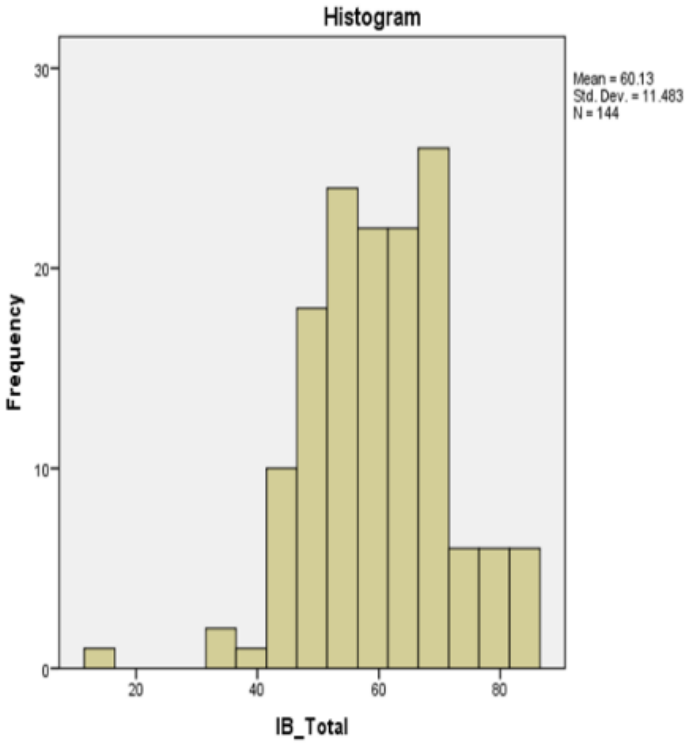


Figure F6. Histogram of innovative behaviours data with case 87.

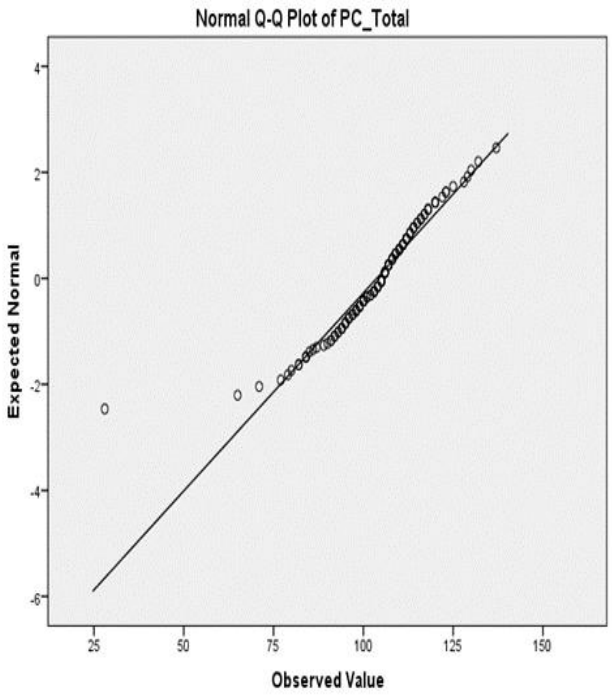


Figure F7. Q-Q plot of PsyCap data with case 87.

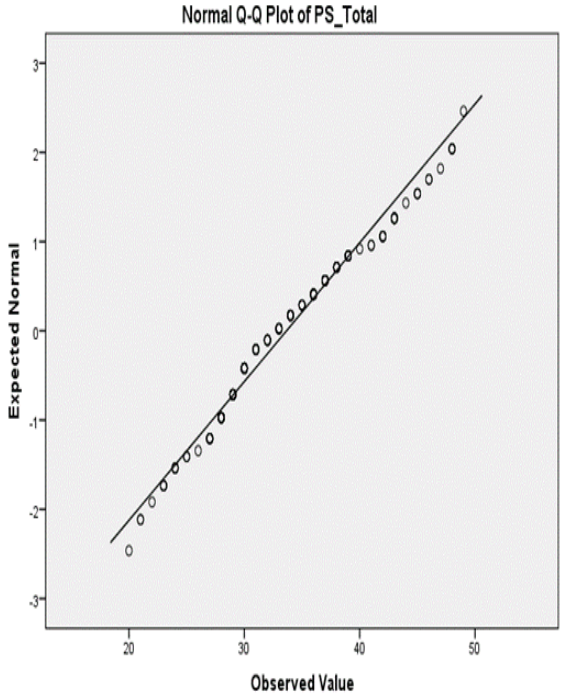


Figure F8. Q-Q plot of psychological safety data with case 87.

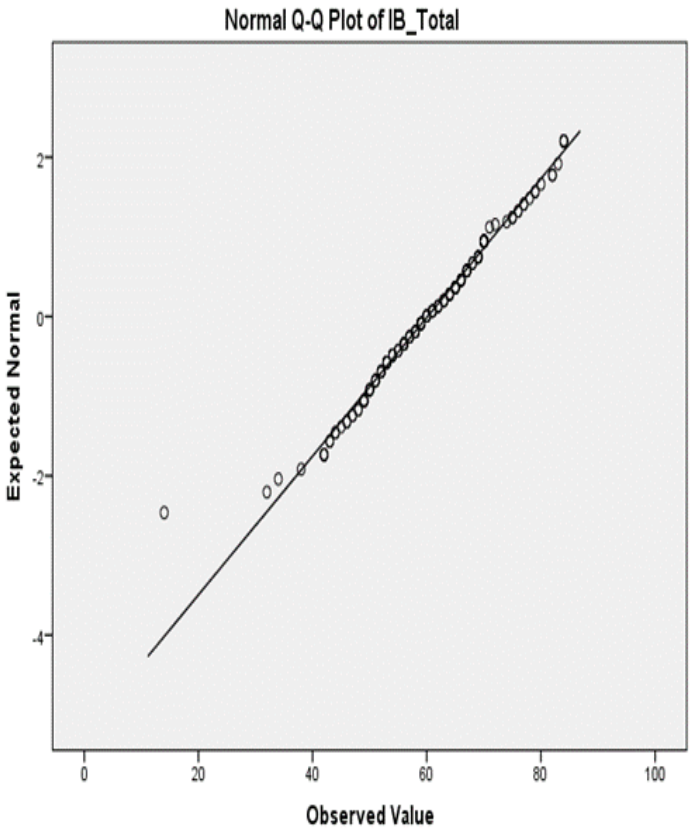


Figure F9. Q-Q plot of innovatve behaviour data with case 87.

Appendix G

Outlier Detection – Boxplot, Histogram, and Q-Q plot (without Case 87)

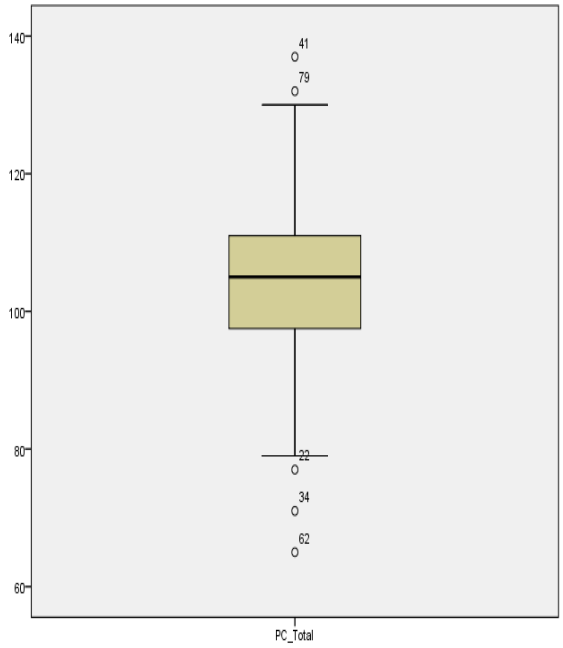


Figure G1. Boxplot of PsyCap data without case 87.

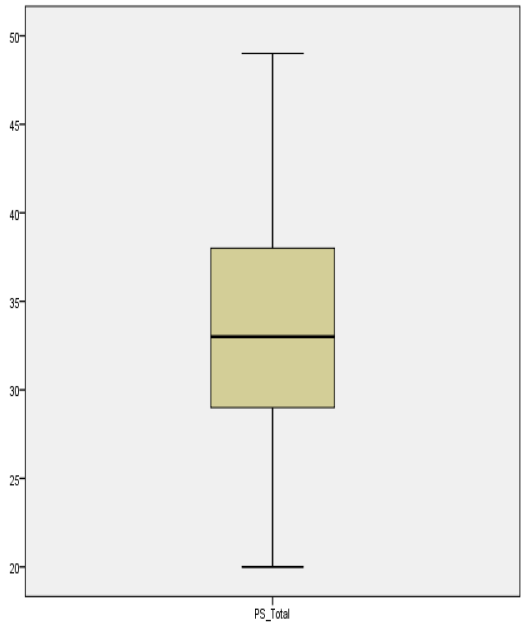


Figure G2. Boxplot of psychological safety data without case 87.

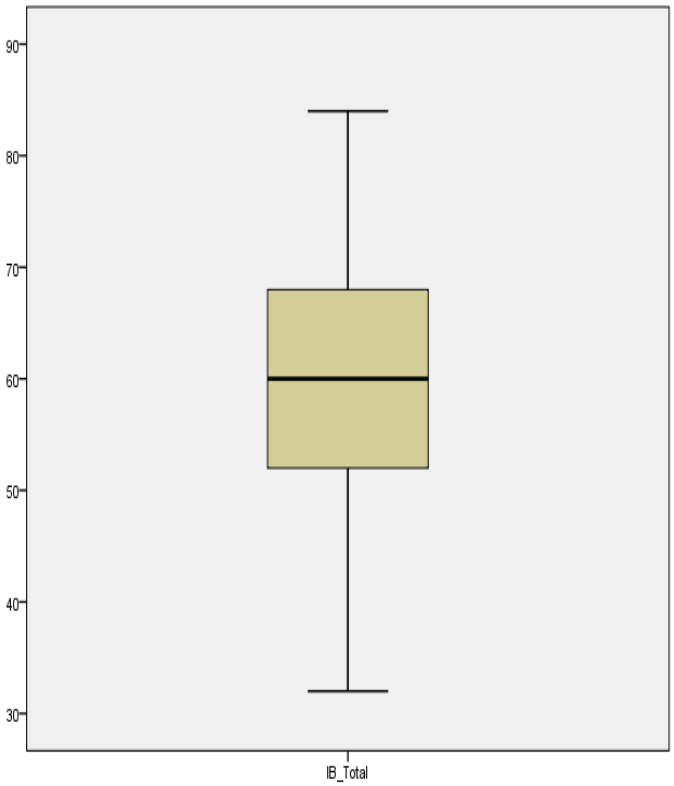


Figure G3. Boxplot of innovative behaviour data without case 87.

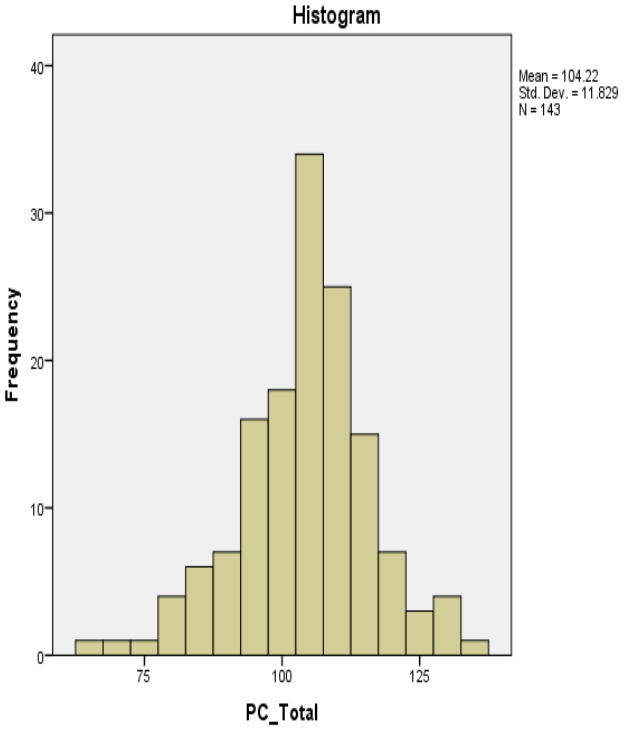


Figure G4. Histogram of PsyCap data without case 87.

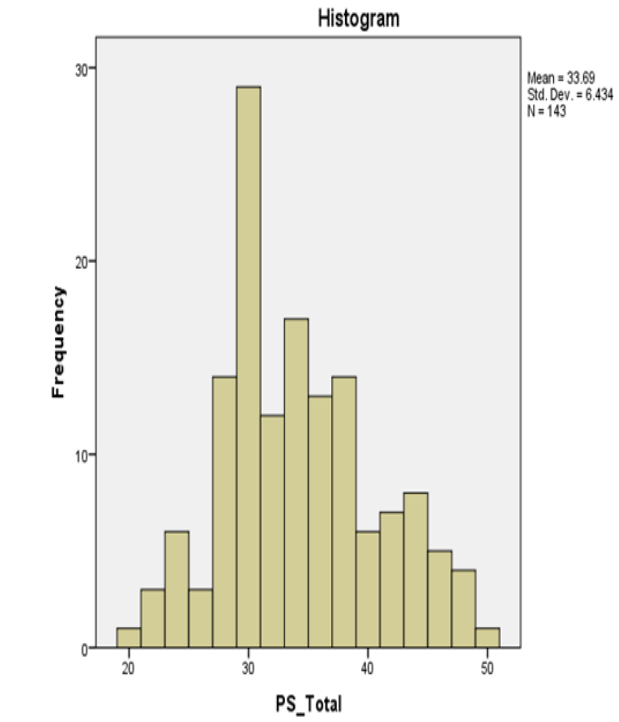


Figure G5. Histogram of psychological safety data without case 87.

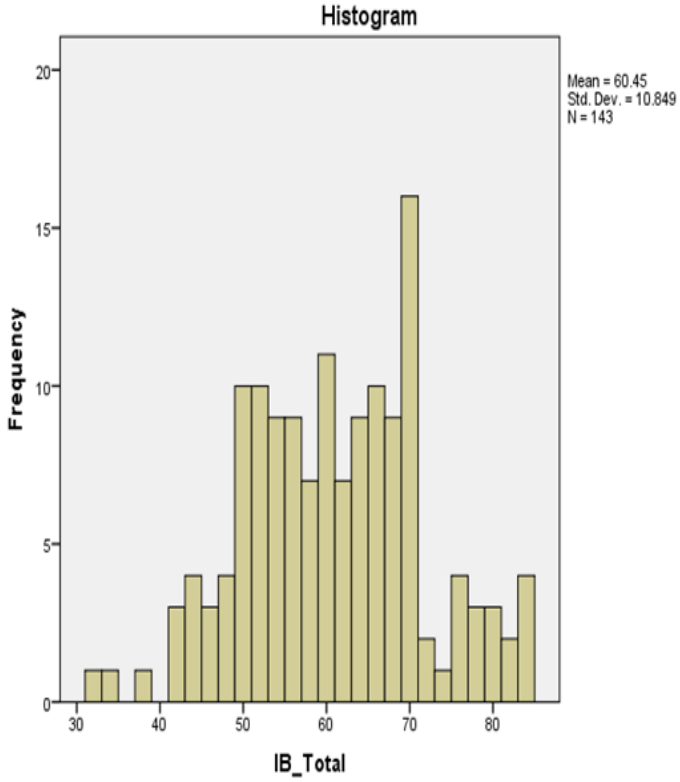


Figure G6. Histogram of innovative behaviours data without case 87.

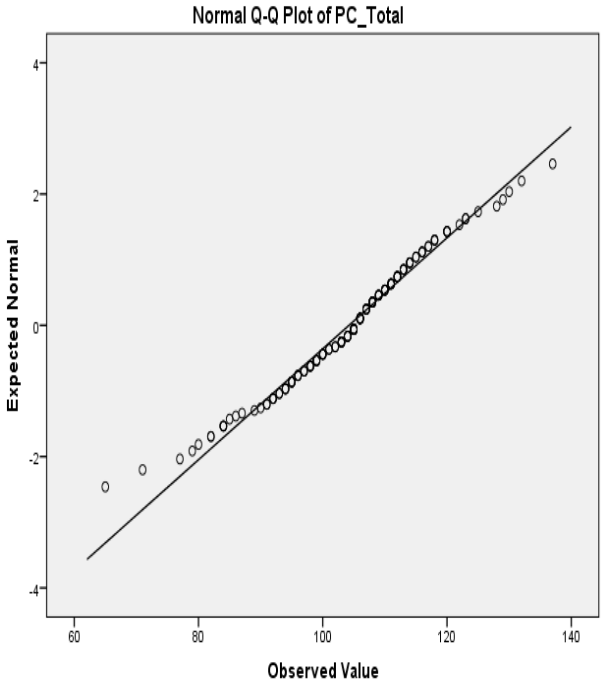


Figure G7. Q-Q plot of PsyCap data without case 87.

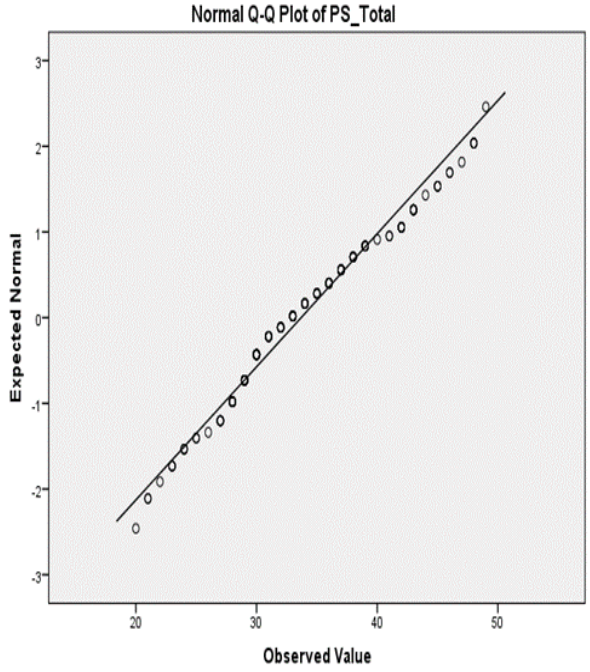


Figure G8. Q-Q plot of psychological safety data without case 87.

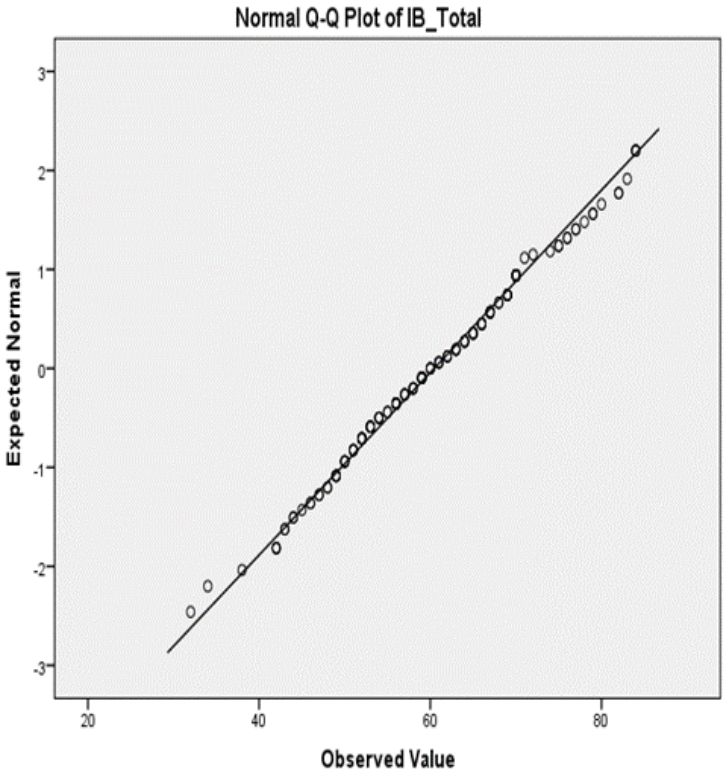


Figure G9. Q-Q plot of innovative behaviour data without case 87.

Appendix H

Cook's Distance, Mahalanobis Distance, and Centred Leverage Distance

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	42.28	79.05	60.45	6.207	143
Std. Predicted Value	-2.927	2.997	.000	1.000	143
Standard Error of Predicted Value	.751	2.964	1.232	.410	143
Adjusted Predicted Value	43.26	78.75	60.46	6.171	143
Residual	-25.954	18.493	.000	8.898	143
Std. Residual	-2.896	2.064	.000	.993	143
Stud. Residual	-2.911	2.084	-.001	1.004	143
Deleted Residual	-26.223	18.850	-.012	9.097	143
Stud. Deleted Residual	-2.993	2.109	-.002	1.010	143
Mahal. Distance	.005	**14.541**	1.986	2.221	143
Cook's Distance	.000	**.106**	.008	.013	143
Centered Leverage Value	.000	**.102**	.014	.016	143

a. Dependent Variable: IB_Total

Table H1. Cook's Distance, Mahalanobis Distance, and Centred Leverage Distance.

Appendix I

Normality Assumption – Histogram and Q-Q plot

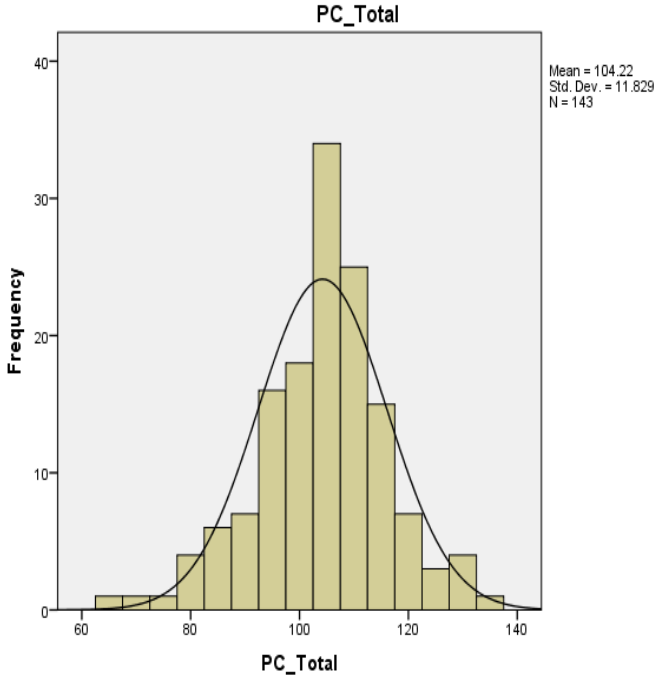


Figure I1. Histogram of PsyCap data.

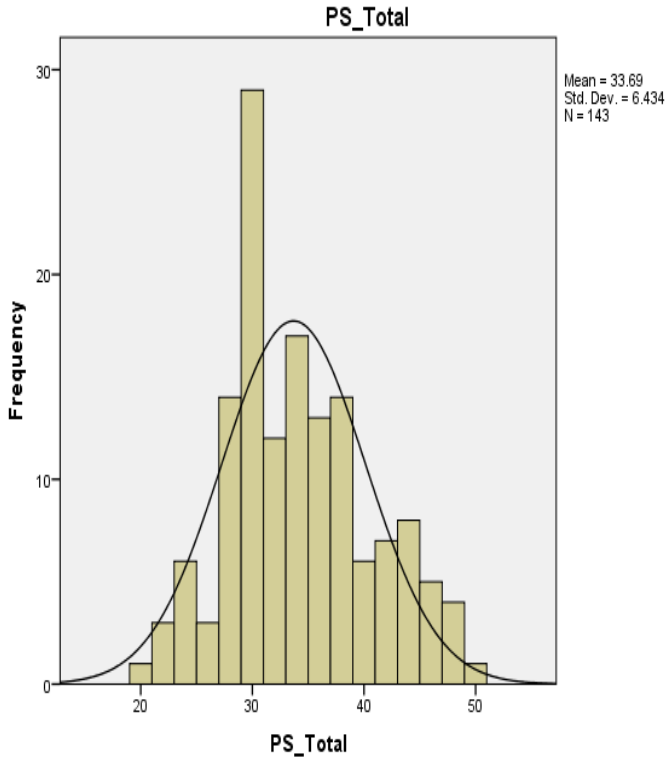


Figure I2. Histogram of psychological safety data.

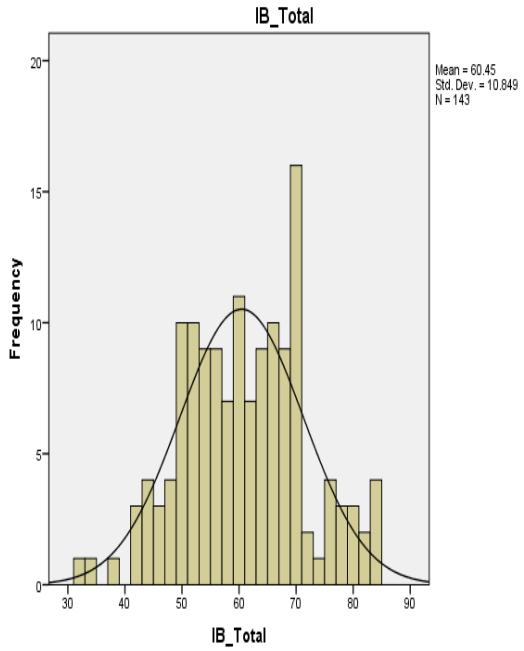


Figure I3. Histogram of innovative behaviour data.

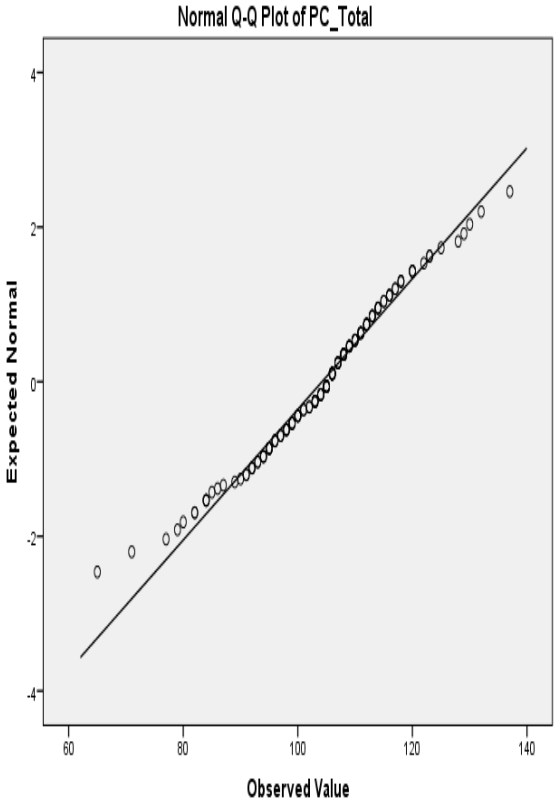


Figure I4. Q-Q plot of PsyCap data.

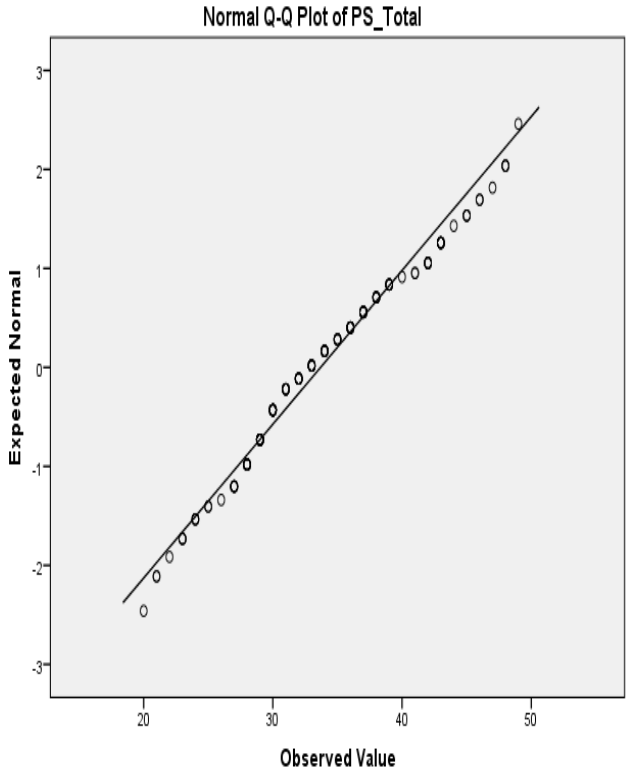


Figure I5. Q-Q plot of psychological safety data.

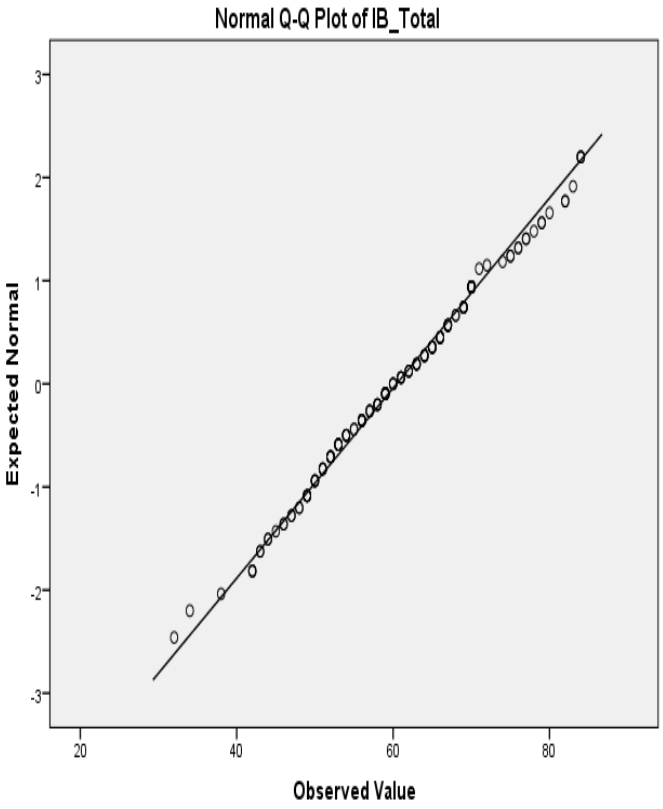


Figure I6. Q-Q plot of innovative behaviour data.