



**Implication of 21st Century Skill Sets on Career Adaptability:
Emirati Undergraduate Perspective of the Connections**

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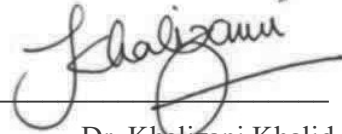
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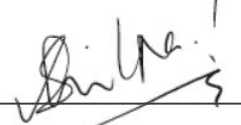


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Implication of 21st Century Skill Sets on Career Adaptability: Emirati Undergraduate Perspective of the Connections

ABSTRACT

Currently, there is a mismatch between the knowledge and skills supplied by the education sector and those demanded by the Emirati labor market. Hence, the government initiative aims to reduce this skill gap by launching education reforms that ensure the supply of employees with the right qualifications to meet the private sector's changing demands. This study examines investigates the relationship between the 21st century employability skills of Emirati undergraduates and career adaptability. It was hypothesized that employability skills of complex problem-solving, critical thinking, creativity, people management, and coordinating with others relate positively to career adaptability. A survey was conducted among 420 students in Abu Dhabi, United Arab Emirates. The findings of the study showed that career adaptability is positively related to the employability skills of complex problem-solving, critical thinking, creativity, people management, and coordinating with others. This study is a preliminary step toward clarifying the complex mechanism through which career adaptability relates to career outcomes and sustaining employability. Concentrating into the context of undergraduates in the United Arab Emirates, this study enlightens the understudied relationship between employability skills and career adaptability and calls for more research that employs boundary conditions that might limit their effects on adapting

behaviors. Consistent with career construction theory, this study presents evidence of the instrumental role of skills required for the 21st century in managing career resources and subjective career success. Understanding the relationship between the 21st century skills and career adaptability offers valuable insights for academia and policymakers on formulating strategies and action plans to continually update the transferable skills of Emirati students. It is also crucial for long-term success in human capital sustainability under the Emiratization policy.

Keywords: *University students, Employability skills, Career adaptability, United Arab Emirates*

LIST OF ABBREVIATIONS

ADEC	: Abu Dhabi Education Council
AI	: Artificial Intelligence
AMOS	: Analysis of Moment Structures
AVE	: Average Variance Extracted
CA	: Cronbach's Alpha
CA	: Career Adaptability
CFA	: Confirmatory Factor Analysis
CFI	: Comparative Fit Index
COW	: Coordinating with Others
CPS	: Complex problem-solving
CR	: Creativity
CR	: Composite Reliability
CT	: Critical thinking
D^2	: Squared Mahalanobis Distance
df	: Degree of Freedom
EFA	: Exploratory Factor Analysis
GCC	: Gulf Cooperation Council
GFI	: Goodness-of-Fit
ICT	: Information and Communications Technology
IRB	: Institutional Review Board for Human Subjects Research
KMO	: Kaiser-Meyer-Olkin
MENA	: Middle East and North Africa

NFI	: Normed-fit Index
p	: Significant Value
PCA	: Principal Component Analysis
PM	: People Management
r	: Correlation
r^2	: Square of correlations
R^2	: Variance
RMSEA	: Root Mean Square Error of Approximation
SEM	Structural Equation Modeling
SPSS	: Statistical Package for the Social Sciences
TLI	: Tucker-Lewis Index
UAE	: United Arab Emirates
VIF	: Variance Inflation Factor
χ^2	: Chi-square
$\chi^2/d.f$	: Relative χ^2

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CHAPTER 1

INTRODUCTION

1.1 Introduction

There has been a persistent need for participation in a competitive economy. In the realm of the workforce, to secure and sustain a competitive advantage, employers are on the lookout for highly adaptable potential employees with more lucrative, valuable, non-imitable, non-substitutable, and non-transferable skill sets (McMurray, Dutton, McQuaid & Richard, 2016). Finch, Peacock, Levallet, & Foster (2016) threw some light on the skill sets needed for dynamic career capabilities that can guarantee graduate employability. They suggested that the competitive advantage of graduates in the labor market can be seen through the lens of their dynamic capabilities and this could be enhanced by analyzing their current competitive advantage. Graduates' skill sets may consist job-specific, meta-skill, personality, and intellectual resources and all these constitute their dynamic capabilities.

Meanwhile, Fugate and Kinicki (2008) and Hennekam (2015) argue that proactive interaction between people and their jobs indicates the applicability of skill sets that is highly pursued in the labor market. Being competitive and

able to survive in response to quick-moving contemporary business conditions are not enough for organization to preserve their human capital (Savickas, 2013). Due to the volatility of the current graduate labor market, graduates can expect to undergo some transitions that require them to adapt to multifarious circumstances and work contexts (Inkson, Dries & Arnold, 2014). However, a graduate cannot ensure employability if he does not have the ability to adapt to career expectations- even if he has a number of skill sets already (Savickas, 1997).

Economists and policymakers have identified the critical economic role of human capital in their cost-benefit analyses, as a way to make sure that a competitive advantage for businesses exists (Asonitou, 2015). Similarly, they found that education opens a path to develop developing human capital. Past research has also highlighted the education sector's crucial role in supplying graduates with the skill sets sought by some sectors in specific countries, simultaneously ensuring constant economic growth (Aida, Norailis & Rozaini, 2015; O'Leary, 2017).

Although there is a body of evidence in previous studies with regard to the importance of the educational system in molding the skill sets of undergraduates (Hamid, Islam & Manaf, 2014; Bennet & Wright, 2010; Cord & Clements, 2010; Gormally, Brickman, & Lutz, 2012; Hafer & Hoth, 1981), and the important skill sets for employability (Aida et al., 2015; Al-Alawneh, 2014; Al-Mutairi, Naser & Saeid, 2014; Asonitou, 2015; Jackson, 2014a), recent research have given the wake-up call that the enormous change in labor markets is not in harmony with the current skill sets of graduates, making the

ability to adapt to this new landscape pivotal (McMurray et al., 2016).

The issues of employability and vocational behavior, mainly on understanding how an individual's skills and attributes influence his or her employability have been the subject in previous studies (e.g., Raty, Komulainen, Harvorsén, Nieminen, & Korhonen, 2018; Ebenehi et al., 2016; McKenna et al., 2016; Samans & Zahidi, 2017). However, recent studies have pointed to the insufficiency of skills and attributes as a ticket for graduate employability without the graduates also empowered with a sense of flexibility, versatility, and adaptability to working conditions, which are always changing due to the volatilizable nature of workforce requirements demanded by employers. Thus, the skill set–career adaptability relationship has also become very flexible and unstable and hence, necessitates further evaluation.

1.2 Background of Study

The recently discussed issue in advanced economies, and, across different sectors in the United Arab Emirates (UAE), is employment adaptability. Asonitou (2015) had included the wide-ranging definitions of employability in his work. While earlier scholars shared the same view that undergraduate employability is the most critical issue (Al-Alawneh, 2014; Bennet & Wright, 2010). some papers lean more towards a more conservative concept of employability that is divorced from the modern schools of thinking.

The Social and Human Resources Development has been outlined by the UAE Economic Vision 2030 as part of its four key priorities. Currently, relevant parties have noted the mismatch between the knowledge and skills

supplied by the education sector and those required by the labor market in the UAE. Hence, its government attempted to reduce this skill gap by reforming the education, so that through time, the best-qualified employees would emerge, to meet the changing demands of the private sector (Abu Dhabi Council for Economic Development, 2008; Statistics Centre Abu Dhabi, 2015). Abu Dhabi Economic Report 2018 focused on the role of education and the skills acquired by the undergraduates to represent the underlying pre-eminent objective and driving motivation in the social and human development agenda. With the economy needing to be more sustainable and diversified, the labor supply side must target at equipping the emerging generation with the current skills sets to create high quality and interesting employment. Diversification of labor means that a quality manpower supply is needed, as an educated workforce will become the solver to the problem of low productivity rates reported in a large part of the Emirates' enterprise base.

There is an abundant of graduates in Administration, Sciences, Humanities, and Law in Abu Dhabi but a 25 percent deficit of graduates in the fields of Business and Engineering. This imbalance of supply and demand has led to the high unemployment rates, that the Abu Dhabi government intends to reduce (5 percent by the year 2030) (Abu Dhabi Council for Economic Development, 2008). Again, here, the need for undergraduates to cultivate employability skills is stressed. Thus, we seek to provide new insights into the important skill sets required for UAE undergraduates to stay employable, in this current study.

1.3 Problem Statement

What has been worrying is whether or not business and engineering undergraduates could adapt themselves to the job requirement and if they could remain employable in the future. A lot of the literature that is looking into this subject has been carried out in Western countries, but employability-related career adaptability is not harmonious with the socio-demographic differences (O'Leary, 2017). Past research did not reject the fact that graduate employability could be improved as long as stakeholders in higher education established some actions plans directed at achieving this goal (Andrews & Russel, 2012; Asonitou, 2015; Ito, 2014). Recent research confirm that skill sets can secure employability (McMurray et al., 2016) and Savickas (1997) argued that undergraduate career adapt-ability is very important to ensure they are ready, and they have the resources that can help them to cope with employment transitions not to mention traumas.

It is alarming that more than one-third of the skill sets in today's workforce will be redundant in the future, as we make way for the new transition to the fourth industrial revolution that will revolutionise the employment, skill sets, and workforce strategies for the next generation (Grey, 2016). Some have argued that while the cost-benefit analyses managed to recognise the crucial economic role of human capital in ensuring competitive advantage for businesses, people are still waiting for the human capital transformation to be initiated (Barnett, 2004) and unfortunately, it is not yet aligned to keep up with the readiness for the future workforce (Torkington, 2016). Hamid et al. (2014), Asonitou (2015), McMurray et al. (2016), and Omar, Manaf, Mohd, Kassim, &

Aziz (2012) further pointed out that the findings on employability skill sets that have long been recorded and established by economists and policymakers are, therefore, old-fashioned.

According to previous studies, the most important skill sets that business undergraduates should have, included the technology know-how, communication, problem-solving skills, and teamwork (Andrews & Russel, 2012; Ito, 2014; Jackson, 2014b). The engineering sector is looking for undergraduates who have more technical knowledge, skills, and abilities, as the country would have a line of engineers with strong interpersonal skills, who are good in communication, time management, critical-thinking, problem-solving and teamwork (Al-Alawneh, 2014; Nilsson, 2010). It is a cause for concern as one points out that the future workforce will be required to have beyond just the current skill sets to remain employable. Grey (2016) reminded that the current skill sets are not static, unstable, and will keep changing following the employment and workforce strategy across industries and geographies. Thus, under this condition, the undergraduates must be able to change and be ready for radical transformations in the workforce.

It is also noteworthy that most studies on career adaptability were conducted with employed and experienced manpower, so there is no proper framework for undergraduates or future manpower- this is based on the observation made by McMurray et al. (2016). In addition, McQuaid and Lindsay (2005) pointed out we have no method to determine the effect of skill sets required to ensure career adaptability in the future, as every country is different as are the industries all over the world. Therefore, more studies on this area should be carried out.

1.4 Research Questions

Having presented the above arguments, the research questions for this study have been formulated:

1. What are the 21st century employability skill sets? and
2. Is there any significant association between the 21st century employability skill sets and career adaptability?

1.5 Research Objective

Identifying the undergraduate skill sets that affect career adaptability for future employability stands as the main research objective. The specific objectives of this study are as follows:

1. To identify the 21st century employability skill sets, and
2. To measure the impact of the 21st century employability skill set on the career adaptability of undergraduates to retain employability in the future.

1.6 Significance of Study

1.6.1 Theoretical Contribution

This study will be looking at the different perspectives of graduate employability as the employability theory is seen to have its weakness. Harvey (2001) argued that a graduate's employability requirement changes according

to how the employers perceive the future and how they regard things that will lead to a successful functioning of their organizations. It is also unfortunate that the literature on employability theory has not investigated the employability concept expansively as it should, or may be able to, which altogether limits the employability notion built around one's employability skills and attributes (McQuaid & Lindsay, 2005). The current literature on vocational behavior justifies the fact that a person's skill sets involve active self-regulation and self-interaction with a complex environment (Chan et al., 2015; McKenna, Zacher, Ardabili & Mohebbi, 2016; Teixeira et al., 2012; Tolentino et al., 2014). Career adaptability literature has established that the fast-paced cultural climate, also the strong changes in technology and socio-economy, have not prepared the graduates to start the careers in the real world (Porfeli & Savickas, 2012; Savickas, 1997). As the result, a graduate with the current skill sets alone will not be able to ensure employability, so the career construction theory might be very helpful in complementing the outcome of employability by weighing upon the preparedness of undergraduates in coping with predictable roles and tasks and adjusting to constantly changing work environments. These complementary theories establish the outcome of employability as the graduate's capability to stay self-sufficient and versatile to serve in the labor market.

1.6.2 Practical Contribution

This study contributes to the individual students, academia, and the Emiratization policy of the UAE. The 21st century employability skills and

career adaptability were examined in a cultural-specific context. The relationship between 21st century employability skills and career adaptability shed light on the instrumental role of skills required for managing career resources and in subjective career success of Emirati university graduates. Apart from the role of academia in providing the requisite knowledge and skills for employability, universities can also contribute by assisting Emirati students in developing their future careers by equipping them with the required skill, as well as self-regulatory resources that can aid graduates' concern, control, curiosity, and confidence before their graduation. This initiative may help Emirati graduates to serve in their respective career paths and to stay in those careers. Continuous update of job knowledge and skill is necessary in order for the graduates to avoid ignoring or turning a blind-eye to the fast-changing economic condition in the developed countries like the UAE. Universities can be their platform to take up and stay in productive employment while developing important skills and honing a self-regulatory mechanism that further help them to connect and deal with changes that can occur in their careers.

The major concern of this study rests on the benefits of examining employability skills to support the career adaptability of Emirati students. Working on the 21st century employability skills before the graduation might increase graduates' competitive advantage in the labor market and help them to be more efficacious and effective in their jobs. The importance of this is emphasized as new business models are emerging and traditional jobs will be impacted, in the sense that they will eventually disappear or be completely transformed. Added by the fact that there is 80 percent foreign workforce in the

UAE, industrial revolution and knowledge-economy will further spur the labor force climate in the UAE, where Emirati graduates will have to struggle and fight against other UAE youth for jobs due to the different skill sets required in the workforce (Jarrar, 2018).

1.7 Limitations of Study

There are some limitations that have to be addressed in this study. First of all, the cross-sectional self-reported measurement used in previous studies was used so that the findings of this study can be generated (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Asonitou, 2015; Bennet & Wright, 2010; Kidwell & Valentine, 2009). In spite of the fact that the results of this study might be constrained due to the social desirability bias, the result can be generalized across regions – the Gulf Cooperation Council (GCC). Additionally, complex problem-solving, critical thinking, creativity, people management and coordinating with others are considered to be the critical transferable skills at the workplace – essential across sectors and jobs and cannot be replaced by technology like the artificial intelligence or robots.

Secondly, while a broader group of students can be used to further make the findings more generalizable, this study only looks upon a sample of Emirati undergraduate students. This might not necessarily be a disadvantage but understanding students' employability skills is essential. It has to be said, that examining different sample sizes may open up some more interesting findings on the relationships between employability skills and career adaptability, and

the dimensions within the same statistical model.

Third of all, the current study's orientation is only on the individual antecedents of career adaptability and it did not assess the boundary conditions that might restrict their effects on adapting behaviors. A possible follow-up to this line of research is identifying the contextual-level moderators of the hypothesized relationships. In other words, it is easy to see that workers with fewer employability skills will highly treasure a proactive personality to draw from their career adaptability resources. However, if an organization values greater autonomy and team performance, workers might have the freedom to express themselves and be empowered and take away something valuable from their own career adaptability resources.

Last but not least, the current findings represent the preliminary step to explain better about the complex mechanism through which career adaptability links with the career outcomes and sustaining employability. Stretching this line of research further will verify the significant relationship between employability skills and career adaptability, which can well be regarded as important issues in the 21st century career literature.

1.8 Definition of Terms

1.8.1 Future Employability Skill Set

Vanpatten and Benati (2010, p. 39) defined skill as an ability, compared to mere mental capability or competence. Saavedra and Opfer (2012) interpreted future skill as a relevant aspect of contemporary life in the complex world that entails complex thinking, learning, and communication skills. The world we are living

today is experiencing a rapid change in the work processes and procedures. Therefore, it is necessary that the future workforce must keep up with this rapid change and always update their skill sets to ensure that they can stay employable (Grey, 2016). Thus, this study sees future employability skill set as the skills and competencies that will allow the undergraduates to make necessary changes and take part in collaborative efforts to ensure a positive transition to future jobs and sustainable employability.

1.8.2 Career Adaptability

Savickas (1997, p. 254) regarded career adaptability as the preparedness to cope with predictable work-role preparation and participatory tasks which also include handling changes in the work environment by making adjustments, where necessary. Previous research also explained in a similar way, that career adaptability refers to the act of successfully managing daily workloads and demands and, also the act of still being able to adjust to the changing working environment (Zacher, 2016).

1.8.3 Employability

Knight and Yorke (2004) defined employability as the ability of graduates to leverage on their academic and personal skills as one way to adapt employers' demands, while Smith, McKnight & Naylor (2000) viewed employment under a specific situation as employability through the more tangible educational outcome measures. Yorke (2006) next, explained employability as a set of

achievements that include skills, understanding, and personal attributes to ensure that there is a better chance at getting a job and to remain successful in the chosen occupations for the benefit of many parties- oneself, the workforce, the community, and the economy. In this study, employability is defined as the abilities of graduates to use their innate tools, which is knowledge, skills, abilities, and competencies to cope with future challenges that arise on the job and which may appear at any point or phase in the workplace setting.

1.9 Summary

Previous studies have focused on the subject of employability and vocational behavior, or specifically on understanding how an individual's skills and attributes influence his or her employability. However, recent studies have shown otherwise- that skills and attributes alone cannot guarantee graduate employability; that they also need to have the elements of flexibility, versatility, and adaptability to working conditions, which keep changing due to the volatility of the workforce requirements required by the internal and external environments or the employers. Thus, the skill set-career adaptability relationship is experiencing change and unstable and further evaluation is deemed crucial.

CHAPTER 2

LITERATURE REVIEW

2.1 Employability Theory

Employability is the capacity to gain and retain formal employment or to seek for new employment under certain circumstances (Hillage & Pollard, 1998). The literature has recommended many factors of employability (Bennet & Wright, 2010; Jackson, 2014a; McMurray et al., 2016; Torkington, 2016). Employability has been defined in a different way based on the study context, so the concept of employability is still ambiguous (Hillage & Pollard, 1998). Little (2001), on the other hand, asserted that as employability comes in multiple concepts, there should be a proper separation between the features pertinent to the job and the preparation for the work.

Pool and Sewell (2007), saw employability as not just being about the graduates' skills in getting the job, but also it is about the interaction between the graduates' personal qualities, various skills, and subject understanding (Knight & Yorke, 2004). The understanding of employability is then put to the

test when more generic academic skills are involved (Holmes & Miller, 2000).

Nevertheless, scholars have been able to show that an individual's personal skills may ascertain his or her success in the labor market (Bennet, 2002; El Mansour & Dean, 2016; McQuaid & Lindsay, 2005). A previous study shed light on the fact that employability skills are the teachable skills clustered into basic academic skills, higher-order thinking skills, and personal qualities that ensure that the graduates get the job, are able to stay at it and perform well in it (Asonitou & Hassall, 2019; Graham, 2017).

While existing studies have adopted the employability concept selectively with some undergraduate employability skills to differentiate the skills that the job needs and the skills that the applicants actually have (Bennet & Wright, 2010; El Mansour & Dean, 2016; Jackson, 2014b; McMurray et al., 2016; Pool & Sewell, 2007; Torkington, 2016), the study on the undergraduates' readiness to adapt to the change at work and the workplace is still lacking and thus further research is essential (Teixeira et al., 2012; Savickas, 1997).

Some point out that age does not influence career decision-making readiness, but career-choice readiness takes influence from individual maturity (Super & Knasel, 1981). Super and Knasel's (1981) had drawn an important conceptual distinction between career choice readiness and career decision-making readiness in affecting an individual's career adaptability boundary and proactive personality, and following this distinction, various studies have attempted to define career adaptability. Thus, the Career Construction Theory serves as a psychosocial resource and guideline for transactional competence in dealing effectively with career-related challenges (Zacher, 2016); this

completes the Employability Theory where the latter predicts the undergraduates' vocational behavior that will affect their future employability. It also aids our understanding whereby how undergraduates deal with their careers in a future are characterized by a more robust economy in which employers carry with them high expectations and demands (Savickas, 2013).

2.2 Career Construction Theory

Savickas (1997) introduced the Career Construction Theory because there is an increased demand for vocational behavior at the expense of ensuring employability. This theory becomes an important tool to explain the adaptability to their future career. Savickas (2013) made use of Super and Knasel's (1981) 'within-the-human' perspective to better his understanding of employability limits. The Career Construction Theory views unique approaches to making sense and inculcating the meaning, purpose, and life direction (Porfeli & Savickas, 2012). These perspectives take into account people preferences (Torkington, 2016), their coping mechanism over work changes and workplace challenges (Zacher, 2016), and the reason for their choice of fitting work into their lives (Chan et al., 2016).

Therefore, the Career Construction Theory establishes that irrespective of one's socioeconomic status and reason for taking a job, work is meaningful to every individual. This theory gives us the rationales, concepts, and processes that explain how vocational behavior perspectives can help construct a meaningful determinant of future employability. It also supports the suggestion by Knight and Yorke (2004) and Pool and Sewell (2007) that the graduate skills

and adaptability to changes and challenges at work are the predictor to future employability. Hall (1996) argued that individuals can become one part of an information society that will be characterized as the main feature in their career. Therefore, according to Savickas (2011), adaptable individuals can adapt better and change to the demands made by the future employment.

Furthermore, scholars have claimed that employment cannot make do with solely generic academic skills (Holmes & Miller, 2000). A competitive advantage in the labor market is manifested by the personal skills demonstrated by job applicants (Bennet, 2002; El Mansour & Dean, 2016; McQuaid & Lindsay, 2005), alongside signs of flexibility, versatility, and adaptability to show that they can stay relevant in the market (Hall, 1996).

Although the Employability Theory still has its significance and relevance from the theoretical, research, and application perspectives, Savickas (2013) asserted that integrating it with the Career Adaptability Theory to predict undergraduates' future employability will yield a more holistic and process-oriented approach.

2.3 Career Adaptability

Fugate, Kinicki, and Ashforth (2004) pointed out that employability is the new direction of proactive adaptability. Kadir and Deniz (2016) pointed out that the future career plans held by undergraduates need them to make a conscious choice of skill sets as they need to keep up with the rapidly evolving employment landscape. Agreeing to this, the World Economic Forum (2016),

reported that, in the millennium, the core skill sets of most occupations will be altered due to a new environment that is inadvertently disruptive to both current and emerging jobs in various industries.

Adaptability sets itself as an essential competency, and in half a decade, there will be a radical change in the world of employment (Shank, 2016) due to great impact brought by the Fourth Industrial Revolution (Younus, 2017). It is further expected that the outburst of new opportunities will bring in some radical changes, which will, in turn, lead to the displacement of jobs. The change in employment is impending, and it requires individuals to take the chance to proactively adapt to the changes. To cater for future employment trends, today's undergraduates have to be in the dark with the unpredictable job landscape in the future, with rapid changes possibly taking place anytime at all (Savickas et al., 2009).

Setting their mind to face the changes in the global economy, undergraduates must build their own careers by being flexible and by being proactive in developing their resource adaptability and employability skills (Oncel, 2014). Employability skills and adaptability resources are the powerful tools that can solve unfamiliar and complex problems presented by the working world today, be it in terms of task development, work transitions or traumas (Savickas, 1997). Since employability skills are psychological attributes affecting the psychosocial attitudes and competencies, the changeable relationship between the two is more crucial than personality traits. Thus, career counselors and coaches should emphasize on fostering career adaptability amongst graduates following the kinds of demands made by the employers.

In both research and practice, career adaptability has outdone career maturity as the dominant construct in the area of career assessment (Savickas, 2013). Career adaptability has moved from preparing individuals in certain jobs, vocation, or occupation to help individuals progress and later, choose suitable and viable opportunities to become the person they want to be (Savickas, 1997, p.257).

Research suggests that career adaptability resources determine one's employability (Ito & Brotheridge, 2005; Luke, McIlveen, & Perera, 2016) to the point that youth professional development is characterized by career adaptability. Youths that can deal with employment transitions can be said to have higher career adaptability (Germeijs & Verchueren, 2007). According to Buyukgoze-Kavas (2016), Ebenehi, Rashid & Bakar (2016), and Hirschi (2009), the level of career adaptability can also be the predictor to both youth's future employability and their career success (Guan, et al., 2016; Rudolph, Lavigne & Zacher, 2017; Zacher, 2014; Zhou et al., 2016).

2.4 Employability Skill Sets

In Australia and Japan, their studies maintained that undergraduates must be technology savvy, can work with others, and are good, effective communicators and problem-solvers, before they can be considered employable. This will, in sum, be considered as good employability skills (Andrews & Russel, 2012; Ito, 2014; Jackson, 2014a). In other literature, it has been found that undergraduates that could deal with job demands and had good soft skills were the more favourite ones (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Asonitou, 2015).

The white-collar jobs such as accounting, engineering, architecture, and computer-related fields require more technical knowledge, skills, and abilities which is different from the office and administrative counterparts (Rebele & St. Pierre, 2019; van Laar, van Deursen, van Dijk, & de Haan, 2019, Yong & Ashman, 2019). Some studies stated that potential employers valued undergraduates with some qualities- good verbal communication skills and able to adapt to changing situations, also good at identifying, compartmentalizing, and setting problems straight (Al-Mutairi et al., 2014). Nilsson (2010) established that employers had named the most desirable skills namely strong interpersonal skills, good teamwork, communication, time management, problem-solving, and critical thinking skills. As a whole, most of the works have cited teamwork and communication skills as the most important employability skills (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Andrews & Russel, 2012; Asonitou, 2015; Ito, 2014; Jackson, 2014a), but future employers are also looking for a new set of skills that can cater for future jobs in the exponential, innovative work landscape that we have today.

Andrews and Russel (2012) reported that some employers had also named the ability to meet appointments and fulfill their responsibilities when it comes to hiring undergraduates but Al-Alawneh (2014) did not refute the fact that there was a lack of time management skills among students, and they did not seem to be willing to improve on their knowledge or even fulfil their responsibility after they had graduated. The majority of employers thought that applicants with better soft skills are more employable instead of those with better technical (hard) skills (Gregorio, Maggioni, Mauri, & Mazzucchelli,

2019; Yusof, Mustapha, Mohamad, & Bunian, 2012). In terms of the rank, employers ranked communication skills, teamwork skills, and professionalism as the first, second, and third most required undergraduate skills, respectively (Yusof et al., 2012).

Recent studies have shed light on generic skill sets that employers want to see existing in their new graduates to ensure that the latter is employable. The skill sets include communication, teamwork, problem-solving, and technology savvy (Andrews & Russel, 2012; Ito, 2014; Jackson, 2014b). The latest Middle East Job Index Survey evidenced that in the UAE, being one of the team members, having the ability to work under pressure, mastering good communication skills in Arabic and English, not minding new challenges, and illustrating leadership skills were the most sought-after skill sets (Bayt.com, 2017). This survey had sought to gauge the perceptions of job availability and hiring not to mention measure the labor market trends in the Middle East and North Africa. This key finding gives an empirical analysis that looks into the relationship between the undergraduate's expectations and the employer's demand in the job market.

Undergraduates also have the tendency to have poor interpersonal skills, other than holding unrealistic expectations that come with the volatile business environment today. Sousa and Rocha (2019) identified that skills, work experience, and competencies related to the business were as important as "hard" knowledge and skills that might be of relevance in business. O'Leary (2017) proved that at the other end of the stick, undergraduates perceived important business and technical skills required by the industry in a different

way. Employers require entry-level employees to have business-related skills abilities and knowledge (Tseng, Yi, & Yeh, 2019), whereas an employee that wishes to climb the corporate ladder feels that it is important to show leadership capabilities and charisma, is committed and innovative, and is able to work in a team (Sousa & Rocha, 2019).

2.5 Future Employability Skill Sets

Jackson (2014b) contended that if the skills can be categorized, the demanding new skills set pursued by the industry can be placed under abilities, competency blocks, and knowledge. O'Leary (2017) pointed out that more often than not, students do not realise the job market's expectations that they need to fulfil in the future.

Employers, researchers, and practitioners now consider the future skill sets that define graduate employability as something that is worth the attention. Many studies focused on graduate employability as it leaves a substantial impact on workforce strategy, (Andrews & Russel, 2012; Huang, Turner & Chen, 2014), business models (Hamid et al., 2014; McMurray et al., 2016), and the employment landscape (Pool & Sewell, 2007; Smith & Comyn, 2004). In other words, organizational success is increasingly determined by the skill sets of future employees (Ebenehi et al., 2016).

An understanding organization, in the sense that it understands the current and future impact of employment level and the skill sets required by different industries and countries can anticipate and prepare for the effect of employment better (World Economic Forum, 2016). The World Economic

Report had anticipated that by 2020, the skills required by today's workforce would have changed by 35% which is a significant percentage. All over the world, complex problem-solving, critical thinking, creativity, people management and coordinating with others are the top-five skill sets undergraduates need to master in the labor market and for them to be able to meet the current shifts in the employer's employment strategy by 2030. In 2015, flexibility and negotiation were the skill sets most demanded, but these are expected to be excluded from the list as we come to 2020. In much the same way, active listening is set to completely be removed from the list of top 10 skills in 2020. Meanwhile, emotional intelligence will be one of the top skills required in 2020, although today it is not cited as the most in demand. These echoes the finding from an earlier study, where future skill sets are expected to have a significant impact on the future job market because occupations and specialties that did not exist ten or even as recent as five years ago are now emerging as the most wanted, when the future not changing in due time (Burger et al., 2019; Gomes, 2014; Gregorio et al., 2019; Holloway et al., 2019; Samans & Zahidi, 2017; Welch & Ureta, 2015). The 21st century skill sets are seen to overlap but all are very important for employability and for survival in the technology-driven economy today (Burrus et al., 2013; Jiang et al., 2019; Kyllonen, 2012; Minocha et al., 2018).

Answering to the economic changes, earlier studies had established decision making (Zoghi, Mohr, & Meyer, 2007), information sharing (Zoghi et al., 2007), the capacity to work in groups (Black & Lynch, 2004), innovativeness (Porter, Ketels, & Delgado, 2007), and flexibility (Gera & Gu,

2004) were the most pursued skills by employers because they are linked with increased productivity and innovation. Hanushek, Jamison, Jamison, & Woessmann (2008) claimed that cognitive skills such as critical thinking and problem-solving skills have their special significance for both employability and survival.

Vockley and Vockley (2008) named entrepreneurial thinking as the umbrella skill indispensable to compete in the global labor market in the United States in the 21st century; it encompasses making innovative use of knowledge, information, and opportunities; creativity; communicating and collaborating; solving complex, multidisciplinary and open-ended problems; thinking critically; and making judgments. Association of American Colleges and Universities' (Hart Research Associates, 2018) that conducted a study on career preparation found that in some cases, students felt that they had a good level of preparation in some areas, but the employers did not have the same opinion. Also, a lot of employers in the United States felt that college graduates were not ready to face the real working world, especially when they demonstrated poor knowledge and skills application.

Meanwhile, the United Kingdom employers established that the most important skill sets for the business and public services industries were risk management, entrepreneurialism, transparency, effective leadership and management skills, not to mention the communication and interpersonal skills. In Finland, university students had been very positive about their own employability and they had a good perception and confidence in their ability to get a good job after graduation. Raty et al. (2018) explained that this is due to

the differing normative power of the context of appraisal. For example, student life is always regarded as less challenging than working life, and that the latter could be different in a lot of ways.

Results from these recent studies were not far off from the findings of an international survey conducted on participants coming from diverse geographical and socioeconomic backgrounds, revealing that most employers felt that new graduates were not prepared to enter the workforce even at the entry level. However, another study discovered that 70 percent of educators agreed that undergraduates were ready to thrive in the labor market, whereas 75 percent of graduates confidently thought that they were ready to work (Mourshed, Farrell, & Barton, 2013).

Feedback obtained from Fortune 500 companies concerning governments and foundations showed that sense-making, social intelligence, novel and adaptive thinking, cross-culture competency, and computational thinking were in the top ranks of skills needed in the future workforce due to the shifts that will alter the workforce landscape to a certain extent (Davies, Fidler, & Gorbis, 2011). There is also an increasingly global lifespan of the careers and learning, new media ecology, superstructure organizations that provide new production and value creation, and a global connected world that puts diversity and adaptability as being crucial to the organizational operations as the drivers to address the issues of a diverse future which will be dominated by science and technology; this simultaneously suggests that the future of organizations and the future of education are at stake.

In the Middle East and North Africa (MENA), the anticipated top five

drivers of change between 2015 and 2020 are the new energy supplies and technologies, mobile Internet and cloud technology, the changing nature of work and flexible work, the young demographic in emerging markets, and geopolitical volatility (Samans & Zahidi, 2017). In particular, the significant critical skill sets that are seen to be able to foster greater employability and life skills among MENA's young people were resilience, self-confidence, negotiation, self-expression, communication, and teamwork. These emerging skill sets, however, must be coupled with digital fluency and the literacy skills in Information and Communications Technology (ICT) so that employees can recognize the full potential of the sector is realized and meet the future skills expectations for the market.

It is believed that the characteristics of the millennial generation (Lee, 2014) and generation Z graduates have something to do with this (Buzzetto-Hollywood & Alade, 2018) as these people are characterized by their overconfidence and boldness as they showcase their personal ability. The interconnection between the undergoing rapid change of employment structure, today's age of technology and economies is stronger than ever before, but the skills gap appears to be broadening. Therefore, it is expected that the mismatch and the gap between future skill sets and existing skill sets make the bridging harder to do. At this point, one solution is to anticipate and respond to the changing skills needed. Furthermore, with new technologies, this could have rendered some workers' skills irrelevant or available future skill sets not being used enough (Frey & Osborne, 2017). Moreover, it would be tough to assess the actual skills of the job applicants who have limited or no work experience;

therefore, the skills of the new talent could not match the skills regarded as necessary for the job (Minocha et al., 2018).

2.6 Future Employability Skill Sets for a Career Adaptability Framework

This study defines the future skill sets based on an evaluation of the skill sets the undergraduates see they would need for the future. Very few studies have directly reported the findings of future skill sets for career adaptability from the undergraduates' standpoint. Therefore, for the constructs to be developed for this study, previous study areas such as employability skill sets and future employability skills have been scrutinized. To evaluate the prospect of employability, the most commonly used model is the future skill set model (Huang et al., 2014). Ebenehi et al. (2016) and McKenna et al. (2016) reminded that each skill set model has a distinctive set of features, making it more difficult to evaluate existing skill set models as far as the career adaptability is concerned. The existing skill set models also tend to be old (Gomes, 2014; Welch & Ureta, 2015). With the drastic and radical changes faced by the global industries, certain skill sets have become obsolete. These factors will all leave a significant impact on the future job market. An important observation of today's job market is that occupations and specialties that are most demanded today are not around years ago, and a rapid change in this scenario will almost be inevitable (Samans & Zahidi, 2017). Given this scenario, it is upsetting to a certain extent that we have no available scale yet to measure the future employability skill sets of graduates that can guarantee career adaptability.

The priorities and ranks of employability skill sets are abundant in the literature, but the tangible impact of future employability skill sets on undergraduate future employment is still very much an open question. The current body of work in this field has also not been able to distinguish the exact in-demand future employability skill sets that may affect employment adaptability, that may give categories to these skills, or a gauge to measure how the skills are mastered.

With increasing interest on these unique characteristics, Vanhercke, De Cuyper, & Peeters (2014) investigated the effects of an individual's perspective on employability through a multidimensional, hierarchical model of skill sets. Vanhercke et al. (2014) added that the main dimensions in future employability are subjective (psychological approach) and objective, which does not deviate much from the models by Forrier, Verbruggen, and De Cuyper (2015) and Fugate et al. (2004). These dimensions can be divided into individual skills, knowledge, competencies, attitudes toward the psychological approach, alongside four other sub-dimensions of human and social capital, self-awareness, and adaptability, which influence an individual's career. This view emphasizes the concept of selves acting to regulate future-directed behavior cognitively (Frazier, 2006).

In a more recent study, Finch, Peacock, Levallet, & Foster (2016) highlighted the skill sets needed for dynamic career capabilities. They suggested that through the lens of their dynamic capabilities, the competitive advantage of graduates in the labor market could be enhanced by analyzing the graduates' current competitive advantage. This model pays attention to the primary

construct of skill sets consisting of job-specific, meta-skill, personality, and intellectual resources as a way to evaluate the dynamic capabilities of graduates in terms of employability. However, this model does not foresee the employability skill sets that might be essential in the future, and how these skill sets will play their role in the career adaptability of graduates.

Fugate and Kinicki (2008) named individual characteristics as factors to promote behavioral, cognitive, and affective adaptability. Hennekam (2015) emphasized that as a consequence of the applicability of skill sets sought after in the labor market, the proactive interaction between people and their jobs will be produced. McQuaid (2006) stated that undergraduates should have the quality of being resilient in fulfilling the demands of the job market other than equipping or simply having the required characteristics. Clarke and Patrickson (2008) assumed that the condition of employability was influenced by the social investment and this leads to career adaptability.

Recent research places high priority on the identification of the qualities of skill sets that make an undergraduate employable. Studies have proposed multiple skill sets for this (De Vos, De Hauw, & Van der Heijden, 2011; Veld, Semeijn, & Van Vuuren, 2015). However, no consensus has been made or confirmed, on the specific skill set required, even more so the skill sets that will impact the graduates' adaptive skill to stay in the job, in the future.

The 21st century skill sets also tend to overlap (Burrus, Jackson, Xi, & Steinberg 2013; Kyllonen, 2012). As noted above, despite the varying sub-dimensions, existing studies have used different employability skill sets to explain career adaptability. However, none of the studies has stressed that there

is a link between future skill sets and adaptive employability. Therefore, the main factors impacting career adaptability for employment in the future are discussed in Section 2.6.1 below. In this study, the undergraduates are considered the future labor market participants, despite being from different programs across tertiary education institutions, and their skill sets acquired during the study period are considered the future skill sets. In addition, the career provider in the job market is the employer. Furthermore, the presumption is that future skill sets and career adaptability skills can be acquired through multiple approaches, not only from formal undergraduate education alone.

2.6.1 Complex Problem-Solving Skill

Complex problem-solving refers to acquiring and applying knowledge in complex interactions to solve problems (Greiff & Fischer, 2013, p. 40). Dorner and Wearing (1995) argued that when a person wants to achieve certain goals in a complex situation encompassing many interconnected factors, this will constitute a complex problem. In effect, a person who can solve a complex problem can adapt to some new and changed circumstances to meet the demand set by the future labor market. Since employability is an abstract concept, complex problem-solving skills gained during the study period will contribute to one's career adaptability in the future (Mellors-Bourne, Jones, & Woodfield, 2015; International Labor Office, 2010; Vockley & Vockley, 2008).

Similarly, complex problem-solving influences a person's career, as he or she will have the ability to plan, explore, and make decisions about his or her future (Savickas, 1997). Studies have also indicated that how fast a person will

get the job can be ascertained by career adaptability and complex problem-solving skills (Coetzee & Harry, 2014; Nota, Ginevra, Santilli, & Soresi, 2014). In the same way, it was also argued that practicing complex problem-solving skills will lead one to face positive career-related challenges (Coetzee & Beukes, 2010), effective career decision-making and adaptive functioning (Savickas & Porfeli, 2012).

Thus, in line with the finding of Johnston, Luciano, Maggiori, Ruch, & Rossier, (2013) and Rossier, Zecca, Stauffer, Maggiori, & Dauwalder (2012), undergraduates should dedicate their time and energy on adapting to the challenging and changing work environment, so what they need to do is to be aware of the future skills and attitudes required to achieve this end. To check on the effect of problem-solving on career adaptability for employment in the future, empirical testing must be underway. In line with this statement, this study proposes the following hypothesis:

H1: Complex problem-solving skill significantly affects career adaptability and its sub-dimensions namely (i) concern, (ii) control, (iii) curiosity, and (iv) confidence.

2.6.2 Critical Thinking Skill

In the context of future employment, critical thinking skills reflect on the ability of a person to think critically and creatively in a work-related context, solve work-based problems, and make sound work-oriented decisions (Tsui, 1999). It

is a higher-order thinking skill that enables employability skills to develop, transfer such skills, and to further develop the employability skills across the career lifespan so one can remain adaptable to workplace changes and challenges that come their way (Tsui, 2002).

MacLellan (2004) argued that with critical thinking skill, one can participate actively and adaptively in knowledge development and this can boost his or her career success. Many employability studies consider critical thinking as involving cognitive skill sets that enable a person to identify and challenge assumptions, to delve into the various alternatives, and to show reasoning and give a thought over various processes for the purpose of interpreting information (Jackson, 2015; Sarkar, Overton, Thompson, & Rayner, 2016; Thomas & Day, 2014). For example, problems at the workplace require the employee to think critically before solving them, to be socially capable, and to have the relevant knowledge and skills (Frost & Willingford, 2013).

As critical thinking development training within the workplace is very scarce, this is testament to the importance of individual decision-making abilities before he enters the labor market and deals with economic uncertainty. To reach career sustainability, this skill set forces a person to engage in highly adaptive actions (Beer, Finnstrom, & Schrader, 2016). Existing findings (Brown, 2015; Chan et al., 2015; Guo et al., 2014; Uy, Chan, Sam, Ho, & Chernyshenko, 2015) have also stated that undergraduates should ensure that they have the critical thinking skills before venturing into the labor market as these skills will have a very effective role in their career adaptability and

employability.

Thus, being the predictor to future employment adaptability, critical thinking should be considered as an important skill set. Although earlier literature had mentioned that critical thinking skill affects decision-making abilities at the workplace and career adaptability and capability, no empirical evidence has been established to support the causality between these factors. Therefore, the hypothesis below is posited:

H2: Critical thinking skill significantly affects career adaptability and its sub-dimensions (i) concern, (ii) control, (iii) curiosity, and (iv) confidence

2.6.3 Creative Skill

Creativity refers to the tangible characteristics of a person (McKinnon, 1962; Tierney & Farmer, 2002) and it can involve unique thought processes (Stein, 1974; Weisberg, 1999) or the knack of producing novel and useful ideas (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Shalley (1995) argued that creative skill varies depending on the activity or task, but it still implies creative behavior in materializing specific goals. Attempting to be harmonious with the literature, the definition of creative skill in this present study is the generation of novel and useful ideas by a person to foster adaptive cognition, behavior, and the effect to enhance the individual-work interface for employability.

Studies also suggest that in the employability context, creative skill should be viewed as an action-oriented metacognitive (Coetzee & Beukes, 2010; Coetzee & Harry, 2014; Coetzee & Schreuder, 2018; Yang, Guan, Lai,

She, & Lockwood, 2015), and proactive-oriented skill (Coetzee & Schreuder, 2016; Tolentino et al., 2014; Uy et al., 2015) that fosters adaptive behavior and positive employment outcomes. Recent research regards creative skill as an element that can well assess future career adaptability (Coetzee & Schreuder, 2018; Ebenehi et al., 2016; Frey & Osbourne, 2017; Hurst, Azevedo, & Hawranik, 2018; Seibert, Kraimer, & Heslin, 2016). Amabile et al. (1996) and Woodman, Sawyer, & Griffin (1993) had the argument that the personality, intrinsic motivation, expertise, and cognitive style of a person can measure a person's or an employee's creative skill.

According to Basadur, Gelade, & Basadur (2014), Gabriel, Monticolo, Camargo, & Bourgault (2016), Geiseinger (2016), and Kuo, Chen, & Hwang (2014), undergraduates need certain multiple-cognitive approaches to develop their creativity. Although research find that there is a co-occurrence among the 21st century skill sets (Burrus et al., 2013; Kyllonen, 2012), according to Restubog, Garcia, Bordia, Bordia, & Roxas (2015), Staddon (2016), and Tolentino et al. (2014), tertiary learning institutions must also play their part to aid adaptive behavior, leading to employability. For example, the education system and the delivery of the system cannot neglect these elements of creativity, and educators must make sure that the information delivered is easy to understand, accurate, and timely (Burrus et al., 2013; Finch et al., 2016), since curriculum content has been verified to influence the undergraduate's creativity level (De Guzman & Choi, 2013; Rudolph et al., 2017).

Since there is a scarcity of studies that have investigated future skill sets, the influence of creative skill on the overall career adaptability behavior to

ensure people's employability will be a fascinating topic to study. Therefore, this study posits the following hypothesis:

H3: Creative skill significantly influences career adaptability and its sub-dimensions (i) concern, (ii) control, (iii) curiosity, and (iv) confidence

2.6.4 People Management Skill

People management encompasses the ideas that people are willing to give and receive feedback, address and support relationships, come to terms with difficult situations, and allow and adapt to change (Patterson, West, Lawthom, & Nickell, 1997; Whitehead & Pankhurst, 2009). Tseng et al. (2019) argued that people management skill involves does not disregard any assessment of the career perspective. Assessment of the career perspective probes into the relationship between skill sets and career adaptability (Jiang, Newman, Le, Presbitero, & Zheng, 2019). Ito and Brotheridge (2005) came up with the primary dimensions of people management namely encouragement, autonomy, participative decision-making, information, and advice. Koen, Klehe, & Van Vianen (2012) agreed that people management skill emphasizes the outcome of the interaction between people who have the tendency to share a common goal.

It is important that when evaluating adaptability behavior in the context of employability, people management skill is considered (Chong & Leong, 2017; Coetzee & Schreuder, 2018; Guan et al., 2016a; Ito & Brotheridge, 2005; Jiang et al., 2019; Karaevli & Tim, 2006; Spurk, Kauffeld, Meinecke, & Ebner

2016). It is safe to say, thus, that attributes of people management skill and the nature of career adaptability could predict a person's future employability (Chong & Leong, 2017; Guan et al., 2016a; Jiang et al., 2019). The people management skill is seen to be pivotal as the undergraduates' psychosocial career attributes are interrelated and they have a positive link with career adaptability. Recent studies have evidenced that conscientiousness, cognitive flexibility, and environmental exploration are the early indicators of self-efficacy, proactive engagement, and career resilience that will gradually be developed by the employees (Chong & Leong, 2017; Coetzee & Schreuder, 2018).

Coetzee and Schreuder (2018) did not deny the fact that there are positive links between career adaptability resources (career concern, career control, career curiosity and career confidence) and career attributes (behavioral adaptability, career directedness, self-esteem, self/other skills, social connectivity and career purpose). Tomlinson (2017) included, in a multi-dimensional graduate capital framework, people management skill for graduates' transition to the labor market and found that the formal and informal experiences of the graduates helped enrich the graduates' skills in the area of people management. Also, there are arguments stating that people management drives career adaptability, and assists graduates' transitions to, and progress within, the labor market (Jackson & Wilton, 2016; Tomlinson, 2017).

Thus, people management skills embody the human socio-cultural, identities and psychosocial dimensions and they require further exploration. This seeks to measure its application in graduates' career adaptability.

Therefore, the following hypothesis is proposed:

H4: People management skill significantly affects career adaptability and its sub-dimensions (i) concern, (ii) control, (iii) curiosity, and (iv) confidence

2.6.5 Coordinating with Others Skill

A person that can coordinate with others is unique and favored, as he or she is able to bring different elements of complex human activity in a given situation and turn it into a harmonious and efficient relationship (Rocha, 2012). Broaching the subject of career adaptability behavior, many studies suggest that coordinating with others is a priceless skill in determining graduate employability (Zaharim, Yusoff, Omar, Mohamed, & Muhamad, 2009; Chong & Leong, 2017; Coetzee & Schreuder, 2016; 2018; Guan et al., 2016b; Spurk et al., 2016; Su & Zhang, 2015). Guan et al. (2016b) indicated that there is something empowering about employees who coordinated well with others as they initiate and coordinate strategic activities to achieve the goals envisioned and intended by the organization.

Peet (2016) argued that the curricular taught by tertiary education institutions today might, unintentionally or not, overlook the need for students to experience coordinating with others, and instead might give more attention to his acquisition of knowledge and skills. Earlier research also agreed that this weakness shown by the system has not only prevented the students from connecting effectively with others to grow and learn, but also ignoring their

sources of engagement, strengths, and intelligence (Duckworth & Gross, 2014; Peet, 2016). As a result, undergraduates enter the world of employment without having the time, or even clue, on how to adjust to changes (Duffy, 2010). The World Economic Forum (2016) reported that a new environment is in the making, and this is driven by the changing nature of work and often translates to the disruption of skill sets. The report indicated social skill the one set that is predicted to be in higher demand across industries in the future. McKenna et al. (2016), Maggiori, Rossier, & Savickas (2017), Olugbade (2016), and Spurk et al. (2016) asserted that industries require ‘a certain kind’ of people- those who have career adaptability, demonstrate effective communication and teamwork skills, as well as those who have the motivation to manage laborious tasks (Finch, Hamilton, Baldwin, & Zehner, 2013; Finch et al., 2016; Jackson & Wilton, 2016).

In terms of coordinating with other colleagues, the most common determinant to this consists of a wide variety of skills ranging from non-academic to professional (Finch et al., 2016; Moore & Morton, 2017), emotional intelligence skills (Ismail, Ferreira, & Coetzee, 2016; Rudolph et al., 2017), teamwork skills (Matsouka & Mithail, 2016; Seibert, Kraimer, & Heslin, 2016; Spurk et al., 2016), problem-solving skills (Guan et al., 2016b; Sarkar et al., 2016), and communication skills (Rabie & Naidoo, 2016; Seibert et al., 2016; Spurk et al., 2016). As employers expect their staff to coordinate well with others, what they are really looking for are one with very good communication skills such as writing skills (Carlson, Rowe, & Curby, 2013; Hyland, 2013), verbal skills (Jackson, 2015; Lopes, Gerolamo, Del Prette,

Musetti, & Del Prette, 2015), and listening skills (Jackson, 2015; Savitz-Romer, Rowan-Kenyon, & Fancsali, 2015).

Not straying away from the literature, this present study sees ‘coordination with others’ as the ability to solve real-world problems collaboratively in multiple contexts using higher-order cognition and creativity to drive adaptive employability behavior. The complex nature of coordinating with others can be a cause for concern among many corresponding parties- the graduates, tertiary education institutions, and employers. However, tertiary education institutions will collaborate better with employers if they defined these skill sets based on how the undergraduates perceive this. Therefore, this study proposes the following hypothesis:

H5: The skill to coordinate with others significantly impacts career adaptability and its sub-dimensions (i) concern, (ii) control, (iii) curiosity, and (iv) confidence

2.7 Development of Research Framework

The link formed by the framework between the studied variables and the relevant theories is undeniable. This study verifies the future skills that influence the career adaptability of undergraduates, forms the research framework around this concept, and further addresses the gap in this field with the help of new ideas and dimensions. Gaining a better understanding of these factors the gap between learning outcomes and the readiness of the future workforce will be very clear. Hence, a series of strategies is laid out to reduce

this skill gap by setting and executing sound education reforms that enable employees to get the right qualifications to meet changing demands outlined by the private agencies. This strategy is important as today's skill sets may not tally with the desired skill sets that employers need in the future.

2.7.1 Issues in Supporting Research Framework

Current research on the employability skills of undergraduates cannot deviate from the traditional conceptual and non-cognitive skill sets (Cuesta & Budría, 2017; Fletcher & Kim, 2019). As an upcoming trend, employers all over the world are looking for graduates with more than just these qualifications, in which non-cognitive skill sets are also seen as a crucial and integral part to good educational achievement and excellent performance at the workplace (Burger, Stavropoulos, Ramkumar, Dufourmont, & Oort, 2019). However, investigations on acquiring new cognitive and non-cognitive skill set that is particularly important in today's exponential job market, have not gone beyond the school setting (Cheng & Zamarro, 2018). Similarly, research on the skill shortage issue in predicting the future skill set required by undergraduates has also been only Western-based (Minocha, Hristov, & Leahy-Harland, 2018; Scandurra & Calero, 2019).

None of the previous studies on this subject has been conducted in the UAE. Prior studies failed to determine or assess the effective strategies that could enhance the current skill sets of graduates (Marin & Vona, 2019), and

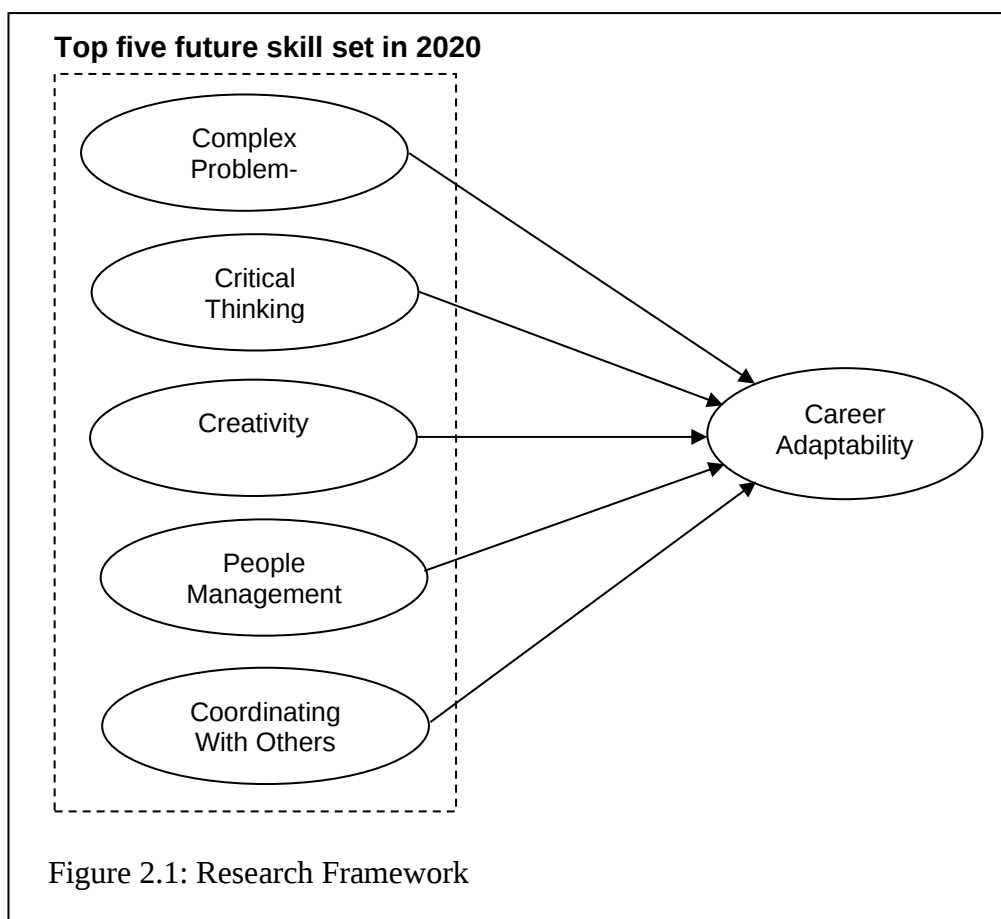
none had even mentioned a proactive approach that can develop the skill set of the future workforce (Holloway, Triyanti, Rafliana, Yasukawa, & Kock, 2019). Therefore, a gap between learning outcomes and the student's readiness to enter the workforce is imminent. These critical elements of quality and sustainability are not complementary to the mainstream pedagogy. Although several studies did suggest that employability-related support should be considered in undergraduate programs (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Asonitou, 2015); very few studies have been conducted to identify several issues, for instance the problems in sifting through employers' future needs, and the gap between undergraduates' perceptions, the hard truth of the working world, and the strategies laid out by universities in the GCC, especially in the UAE. Moreover, past research admitted that graduate employability could be enhanced as long as stakeholders in higher education played a part, like planning the actions that are oriented towards this goal (Andrews & Russel, 2012; Asonitou, 2015; Ito, 2014). The lack of decision on this matter will disturb UAE's future workforce planning; and as the result, individuals, economies, and societies will be adversely impacted, and there will be economic and social costs that must be borne.

2.7.2 Research Framework

In this chapter, the relevant theories and concepts have been identified from the literature review, and they are used as a basis for the hypothesis development of this study. Nevertheless, testing these hypotheses is crucial to ensure that the

proposed model is indeed suitable as a justification to the effect of future skill sets on career adaptability. The researcher had worked on the research framework, presented in Figure 2.1, based on the literature review. This framework expounds the possible impact of the top five skills recommended by the World Economic Forum (2016) and aligned with the recommendation made by the current literature (e.g., Beer et al., 2016; Chong & Leong, 2017; Coetzee & Schreuder, 2018; Frey & Osbourne, 2017; Hurst et al., 2018; Jiang et al., 2019; Johnston et al., 2013; Jackson, 2015; Maggiori et al., 2017; McMurray et al., 2016; Mellors-Bourne et al., 2015; Rudolph et al., 2017; Sarkar et al., 2016; Tomlinson, 2017) to ensure that undergraduates remain employable in the future and they know their degree of career adaptability. These are important as the 21st century skill sets tend to be conflicting (Burrus, Jackson, Xi, & Steinberg 2013; Kyllonen, 2012). Next, it has been proposed that complex problem-solving, critical thinking, creativity, people management, and coordinating with others skill sets should be regarded as action-oriented metacognitive (Coetzee & Schreuder, 2018; Yang et al., 2015), and proactive-oriented skill (Coetzee & Schreuder, 2016; Tolentino et al., 2014; Uy et al., 2015) that foster adaptive behavior and positive employment outcomes. According to Gabriel et al. (2016), and Jiang et al. (2019), undergraduates need to receive some timely and multiple-cognitive approaches to develop their skill sets to ensure their career adaptability. These skill sets are from a wide variety of non-academic and professional skill sets (Finch et al., 2016; Moore & Morton, 2017), emotional intelligence skills (Ismail, Ferreira, & Coetzee, 2016; Rudolph et al., 2017), teamwork skills (Matsouka & Mithail, 2016; Seibert,

Kraimer, & Heslin, 2016; Spurk et al., 2016), problem-solving skills (Guan et al., 2016b; Sarkar et al., 2016), as well as communication skills (Rabie & Naidoo, 2016; Seibert et al., 2016; Spurk et al., 2016). These suggestions echo those by Fugate and Kinicki (2008) whereby individual characteristics serve as factors to promote behavioral, cognitive, and affective adaptability. Hennekam (2015) reiterated the proactive interaction between people and their jobs as a consequence of the applicability of skill sets deemed crucial in the labor market.



2.8 Summary

This chapter establishes an overview of the key concepts and theories that have been discussed and empirically tested in earlier literature. The synthesis of these components becomes the strong mainstay for this study. It is a fact that the priorities and ranks of employability skill set that industries require have been provided abundantly in the literature, but the tangible impact of future employability skill sets is still a matter of debate. The literature did not refute the gap that exists between future skill sets and their impact on career adaptability. Thus, a breakdown of these skills, also a way to measure the mastery of these skill sets towards career adaptability shall further be explored in Chapter 3.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Chapter Introduction

Chapter 2 had given us the literature review on employability and career adaptability theories with the relevant research on the subject being summarized. The literature review underlined the issues in previous research related to the importance of 21st century employability skill set in determining graduates' career adaptability on their future employment. The objective of this chapter is to connect the nature of research model identified in Chapter 2 with epistemological beliefs in this chapter to verify the concept. This chapter puts some weight on the importance of going into a research paradigm that relied greatly on the methods used to answer the research questions, test hypotheses and on the meticulous application of research design. Overall, this chapter establishes thoroughness in the research design by explaining about the application of relevant research technique at each phase with the help of adequate logic and support obtained from the literature.

3.2 Research Paradigm

Quantitative research runs a series of tests on objective theories by checking on the relationship between variables (Creswell, 2003). These variables are measured using an instrument, so that the numbered data can be analyzed using the statistical methods. Quantitative research enables data measurement and analysis, as well as allows a thorough examination of the association and causality aspects of the study variables; hence granting this work with an advantage, as a more objective approach to the research findings can be obtained (Zikmund et al., 2010). Roscoe (1975) also mentioned that because quantitative research adopts the statistical tools to measure data, and this research method could also be used to put the study hypotheses to the test.

In addition, Saunder, Lewis, and Thornhill, (2007) made a point that quantitative research differs from the qualitative research; in the former, hypothesis testing is done as the structural matters are emphasized. Therefore, the researcher will use an objective lens to view the study and participants (Hair et al., 2010). In quantitative research hypothesis testing, the data collected can be normalized, as the interpretation of research is based on empirical results that can be replicated by other researchers (Kline, 2010).

The positivist paradigm regards the world as made up of observable and measurable facts, and this is the basis of the quantitative methods. This study embraces Kant's view and proposes a positivist research philosophy assuming that the world of phenomena has an objective reality. This can be expressed in causal relationships and measured in a representative and accurate manner in the form of data (Creswell, 2003). The essence of a positivist approach lies in

the unraveling of the reality by crafting precise measures that will detect the dimensions that grab the attention of the researcher (Rogala & Cieslak, 2019). The premise is the existence of a priori relationship within phenomena typically investigated with a structured instrumentation to test the theory, calculated as one possible way to increase the predictive understanding of the phenomenon (Al Mazrouei et al., 2019). It is the task of the positivistic research to discover these patterns and regularities and describe them in a cause-effect relationship.

Furthermore, positivistic research is believed as useful for effective control and prediction based on the knowledge gained through experiments models and quantitative analysis aiming to refine, validate or reject the hypotheses posited. Quantitative study adopts a deductive approach to understand the relevant theories and makes specific conclusions through logical arguments (Ragab & Arisha, 2018). Quantitative research receives some criticisms because it forces research participants to choose a response set by the researcher, which, in turn, makes the process of understanding the meaning and interpretation of specific issues limited (Bryman & Bell, 2006). The quantitative research seeks to examine causes that result in outcomes; thus, a quantitative approach is most suitable when a research problem aims to investigate factors that affect an outcome or the best predictors of outcomes. Additionally, quantitative methods can also be used to test a theory (Creswell, 2009).

This study employs quantitative methods because the aim of this research is to look into the relationship between different variables and employee turnover intention. Quantitative research refers to a means for testing objective theories by studying the relationship among variables (Creswell,

2009). The dependent variable, which is career adaptability and the independent variables, which are 21st century employability skill sets are measured through a questionnaire. It is worth noting that the quantitative methods have been the main approach used in vocational behavior research for decades.

3.2.1 Research Epistemology

A key determinant of research methodology is the state of prior knowledge of the research topic examined. According to Edmondson and McManus (2007) the theory in management research falls along a continuum where it can be divided into three categories:

1. Mature theory that presents well-developed constructs and models, results in a body of work that consists of points of broad agreement representing the cumulative knowledge gained. Typically, Mature theory uses quantitative data.
2. Nascent theory typically uses qualitative data proposing tentative answers to new sets of questions of how and why, often suggesting new connections that can exist in the phenomena.
3. Intermediate theory is positioned between mature and nascent theories presenting the provisional explanations of phenomena, often introducing a new construct and recommending relationships between it and established constructs. Intermediate theory tends to use mixed data, quantitative and qualitative.

Thus, the research on employability skills and career adaptability fall under the mature theory approach, that leans on well-developed constructs and models (e.g., Liu & Lin, 2010; Oldham & Cummings, 1996; Savickas & Porfeli, 2012; Shanahan et al., 2007, Spaeth & O'Rourke, 1994; Zhou & George, 2001). It is common for a researcher to test a theory in a new setting, identify or clarify the boundaries of a theory, examine a mediating mechanism, or provide new support for or against previous work in a mature theory research (Edmondson & McManus, 2007). This is achieved by working on specific testable hypotheses based on logical arguments formulated from prior work. The objective of this current work is to identify the 21st century employability skill sets and gauge its impact on the undergraduates' career adaptability to retain employability in the future for the UAE. This research tests a number of specific hypotheses concerning the generalizability of these two approaches in a new context. It is thus decided that the methodology that best fits this thesis is quantitative methodology, taking guidance from Edmondson and McManus's (2007) framework.

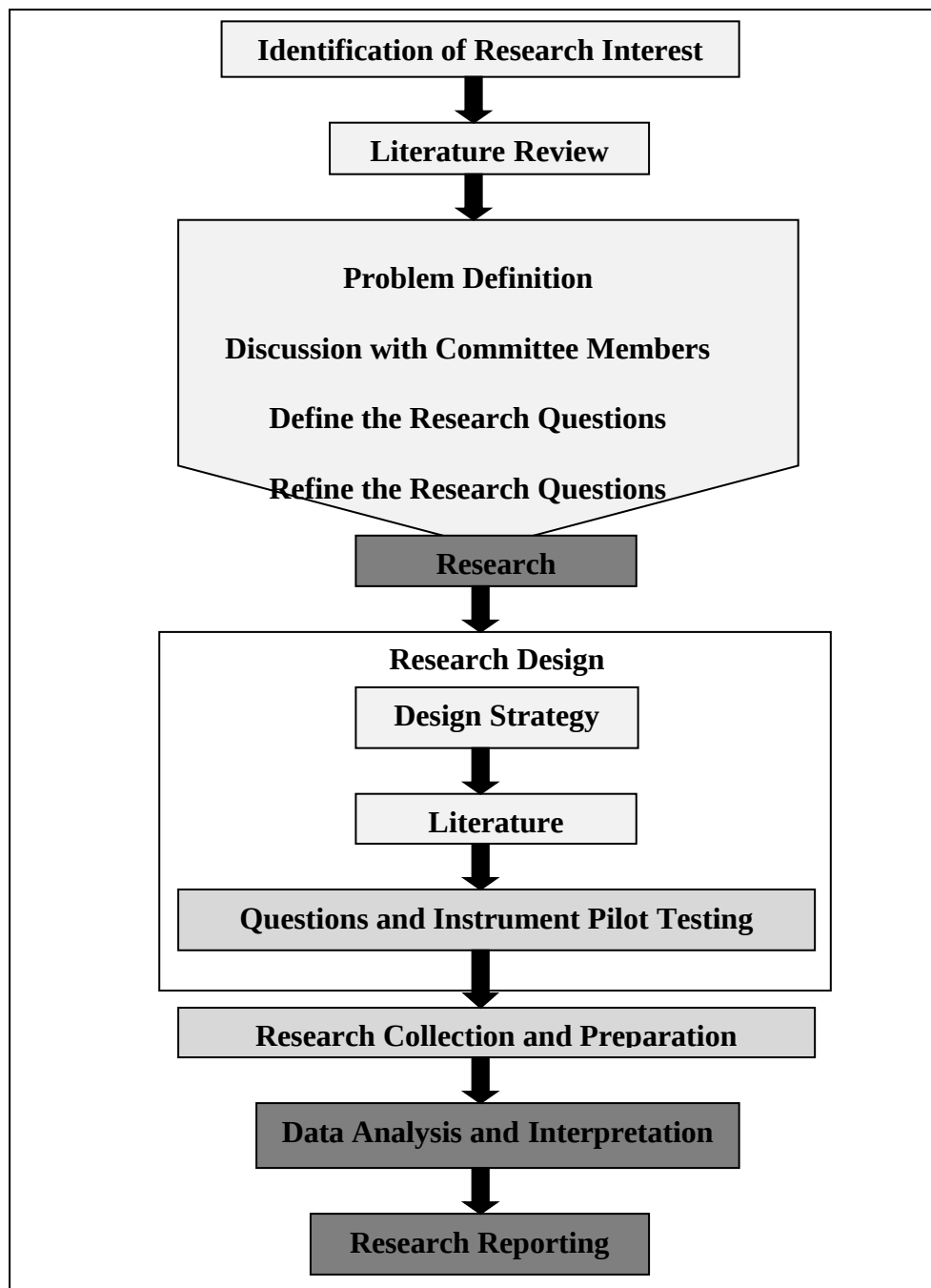
3.3 Research Process

Figure 3.1 shows the sequences of the research process (Sekaran & Bougie, 2010; Zikmund, Babin, Carr, & Griffin, 2010). The research model serves as a guideline to carry out the study. In addition, the model allows a more efficient and systematic research process to be achieved, and enables a better and more effective data collection and research planning.

As the research interest was identified, the data collection at the preliminary stage began. This step entails a literature review to determine the study's problem statement, which was determined from the gap apparent in previous works. For a better understanding of the problem investigated, the researcher had built a plan or a structure of investigation (a research blueprint) for the purposes of collecting, measuring, and analyzing the data. From this initial stage, the researcher was able to refine the research framework and revise instruments that were found inadequate or missing.

3.4 Research Design

According to Zikmund et al. (2010), research design provides procedures and methods to collect and analyze data, so it helps guide the researcher. To explain this further, Sekaran and Bougie (2010) maintained that the design of the study helps to ensure that the most important data are analyzed and collected- this will lead to a much better, more reliable conclusion.



Legend:



Research



Data Gathering



Analysis, Interpretation & Reporting

Figure 3.1: Research Process

3.4.1 Sampling and Population

The study sample consisted of undergraduate students from universities across Abu Dhabi. The sampling criteria underlined that the undergraduate students must have undergone a minimum of 90 credit hours learning about and experiencing shared curricular practices. They must also have participated in co-curricular activities and experiences (collaborative learning) (Littledyk, Manolas, & Littledyke, 2013). Hence, the enrollment of undergraduates for the academic year 2013–2014, making up 69.7 percent (35,414) of the total number of 50,809 students in the universities, was set as the total sampling timeframe for this study (Statistical Centre Abu Dhabi, 2016).

According to Krejcie and Morgan (1970), for a 50,809 population, 382 would be a sizeable sample size. This is aligned with Roscoe's (1975) rule of thumb to determine the sample size, underlining an appropriate sample size for most research which is between 30 and 500. One approach to calculating the required sampling size in Behavioral Science by Cohen (1992) agrees that a sample size between 85 and 217 is enough to conduct a correlation analysis.

This study used unrestricted probability sampling, namely simple random sampling. This approach can yield high generalizability of findings, as demonstrated by previous studies (Fosnacht, Sarraf, Howe, & Peck, 2017; Tipton et al., 2016). This approach also enables all known undergraduates to have the same chance of being selected as a subject for this study.

3.4.2 Research Method

The major factors determining the selection of research type are: i) the cost of obtaining the data; ii) decision urgency; iii) the availability of the data sources; iv) the study objective; and v) the research problem.

This study served as an exploratory and causality study, as future skill sets were explored to verify the utility of the measurement, while the effect size of each relationship was measured in the light of career adaptability. Since the subject of study is new and vague, according to Sekaran and Bougie (2010), an exploratory study was adopted. Then, a causal study enables the reasons behind any changes to be identified, offering the chance that the study is replicated (Hair, Black, Babin, & Anderson, 2010). To support the exploration approach adopted in the work, the descriptive study was also applied to describe the respondent's demographic profiles based on the variable of interest.

3.4.3 Quantitative versus Qualitative Research

As an advantage, quantitative research allows for data measurement and analysis, and a more thorough examination of the association and causality aspects of the study variables; hence a more objective approach to the research findings is gained (Zikmund et al., 2010). Roscoe (1975) also mentioned that because quantitative research adopts statistical tools for measuring data, this research method could also be used to test the study hypotheses.

Moreover, Saunder, Lewis, and Thornhill, (2007) stated that quantitative research can be distinguished from the more heavily process-involved qualitative research; in the former, hypothesis testing is done via an emphasis on structural matters. Therefore, the researcher will take a look into the study and participants objectively (Hair et al., 2010). Besides, in quantitative research hypothesis testing, the data collected can be normalized, as the empirical results will interpret the research.

The quantitative research approach was adopted in this study because the study's main objective is to examine the cause of future employability skill sets and their effect on career adaptability among Abu Dhabi's undergraduate students. Consequently, using quantifiable data from the sample population of interest would allow for the generalization of the findings. Therefore, all phases of this study were performed in a quantitative way; they are the main study, the data collection and analysis, and the pilot testing.

3.4.4 Method of Data Collection

A two-phase data collection method was employed in this study:

1. Pilot test data collection; and
2. Main study data collection.

A pilot test helps the researcher to examine the degree of suitability of the data collection plan for the actual study, and the test is therefore important to carry out. Thus, in the case where the work were improperly designed, the errors could be minimized when the actual study was conducted. In addition,

through pilot testing, the researcher could identify and rectify problems that might have occurred when using the data collection instrument (Sekaran & Bougie, 2010). This approach also experienced modification and considered earlier solutions. Following Zikmund et al. (2010), pilot testing minimizes errors due to the poor study design and helps identify whether the actual study would be in line with the data collection plan. Prior to any replication attempt, it is important to identify whether the original construct measures have been changed in any way, as severe changes could occur in this condition (Brandt et al., 2014).

For the actual (main) study, the pilot test could be replicated and applied. In the actual study, the data on the study variables were collected to systematically answer the research questions and to enable the following assessment of the research findings. For the accuracy of the data, and for the validation of findings, a formal data collection process must be adhered to (Shenton, 2004). In doing so, the researcher is given a baseline measurement and he will be able to identify any areas that can be improved. The integrity of research really relies on the data accuracy (Zikmund et al., 2010). This can be ensured via the use of appropriate data collection techniques and instruments (Sekaran & Bougie, 2010), as well as the reduction of the probability of error occurrence by defining the instructions and their correct use with clarity.

3.4.5 Sources of Data: Primary versus Secondary

During this study, it was found that secondary source data was not sufficient to pool findings, so only primary data had been utilized. Primary sources of data are the focus group, observation and experimentation, questionnaires (administered in various ways- electronically, personally, or via mail), and interviews (also in the forms of the telephone, computerized, or personal) (Sekaran & Bougie, 2010).

The online survey was adopted because it was found to best suit the objective of this study. Primary data was confirmed to be reliable for replication of procedures and for checking the results as the data collection procedures and analyses are commonly done (Cohen, Manion, & Morrison, 2000). Furthermore, the data gathered provides more recent information, as the data is obtained from the sample population directly when answering the research questions.

3.4.6 Questionnaire Survey

The online questionnaire method was chosen for this study. It should be noted, however, that online questionnaires could return a low response rate compared to the paper-and-pencil administered survey (Kwak & Radler, 2002). To minimize non-response bias, the survey was distributed to samples that are double the actual number. Respondents' anonymity and confidentiality were ensured, and they were also fully informed of the study background and purpose.

According to Frohlich (2002), a study can be generalized only if the response rate is 30% to 35%. Meanwhile, a minimum returned sample size of 119 can be accepted for generalization.

To make sure that this literature follows the ethical conduct, the online questionnaire was sent to the Institutional Review Board for Human Subjects Research (IRB) of Abu Dhabi University to be approved (Appendix A). Having received the consent email later, the respondents of this study were assured anonymity, confidentiality, and leisureliness of response to reduce the non-response rate.

3.4.7 Design of Questionnaire and Development of Instrument

There are two sections in the online questionnaire, Section A and B. The demographic variables of respondents are listed in Section A, while Section B is made up of six subsections based on the variables in question.

Proposed by Greiff and Fischer (2013), the components of complex problem-solving skills were formed from five items. Based on a 7-point scale, the items measure the complex situation and causal structure. The items were averaged out, and undergraduates with higher scores are regarded as the ones with better complex problem-solving ability.

Critical thinking skills were measured through five items, the measurement of which, is adapted from Liu and Lin (2010). The seven-point scale-based questions sought to elicit the meta-cognitive problem-solving approach of undergraduates, where higher-scoring undergraduates would be seen to have better critical thinking skills.

To elicit the creative skills of the undergraduates, a five-item 7-point Likert-type scale was used (Oldham & Cummings, 1996; Zhou & George, 2001) and the responses were processed and averaged. The items refer to the degree of creativity that the undergraduate uses in terms of completing tasks. A high score means that the students use a high level of creativity, and vice versa.

The respondents' people management skills were also included in the questions. This is according to five items adapted from Spaeth and O'Rourke (1994), based on a seven-point scale that measures the extent of undergraduate's perception over how they cooperate, communicate, make decisions, and trust others. The undergraduates with a higher score indicated their demonstration of better people management skills.

The 'coordinating with others' skill was measured based on five items-taken from Shanahan, Best, Finch, & Sutton (2007), after which the responses were also calculated in average. Meanwhile, a seven-point scale served to measure the extent of the social skills demonstrated by the undergraduates. A high score gives an implication that the undergraduate has a better ability to coordinate with others.

The 24-item Career Adapt-Abilities Scale by Savickas and Porfeli (2012) was used as the measurement of career adaptability. The items are scored from 1 to 7, with 1 suggesting no adaptability and 7 the highest adaptability. The items seek to find out about the undergraduates' degree of confidence, curiosity, control, and concern. Table 3.1 lists the instrument used as well as the corresponding source of reference.

The first step to take when developing the instrument was having a

bilingual translator familiar with the instrument, do the forward-translation of the English-version questionnaire instruments to Arabic.

Table 3.1: Sources referred for the instrument development

Variable/Dimension	Number of items	Source
Career adaptability	24	Savickas and Porfeli (2012)
Concern	6	
Control	6	
Curiosity	6	
Confidence	6	
Complex problem-solving	5	Greiff and Fischer (2013)
Critical thinking	5	Liu and Lin (2010)
Creativity	5	Oldham and Cummings (1996), Zhou and George (2001)
People management	5	Spaeth and O'Rourke (1994)
Coordinating with others	5	Shanahan et al. (2007)

The English and Arabic versions were checked so that they are semantically equivalent, and that the vocabulary used for the translation can be understood easily (Dagut, 1981). To verify that the Arabic version was acceptable, an expert committee comprising of a translator, education professionals, and a language professional—was chosen to go through and revise the translated questionnaire.

The back-translation is the next stage, in which the Arabic-version questionnaire instruments were translated into the English language by a native English speaker, also fluent in Arabic. This translator was not exposed to the original questionnaire in the beginning nor was he familiar with the instrument concepts. As the next step, to identify any differences or inconsistencies between the two versions the expert committee brought to comparison the back-translated English questionnaire to the original English questionnaire (Colina, Marrone, Ingram, & Sánchez, 2017). This forward-back translation was repeated until a final acceptable version was achieved.

Then, the final version of the English and Arabic questionnaire was handed to a representative sample composed of 10 bilingual volunteers. The volunteer respondents then had dealt with both versions. At the same time, the respondents were also cognitively debriefed where some probe questions were given to the respondents to determine if they could understand the meaning of each question, and if the items had weakness for example being unclear, unusual, offensive, or awkward. When answering the probe questions, they had given their views on the addition or deletion of activities. They were also asked about their choices and if the time limit was acceptable (Wild et al., 2009). The

principles of the most widely used models in questionnaire translation and back-translation models have been actively used to conduct these processes (Brislin, 1970). The English-version and Arabic-version questionnaires are attached in Appendix B and Appendix C, respectively.

3.5 Pilot Test

The online questionnaire was subjected to the pilot testing phase to test its validity and reliability. According to Conelly (2008) 10 percent of the sample projected for the larger parent study would be sufficient for a pilot study, but other studies asserted that the sample for pilot study might not be directly proportionate to the larger sample and to add, it was not a straightforward issue to resolve. Hertzog (2008) argued that multiple factors have to be considered based on the type of study. In this context, researchers suggest that an appropriate pilot study sample would range from 10 to 30 (Hill, 1998; Julious, 2005; Issac & Michael, 1995).

The pilot test came in useful as it can figure out any drawbacks or issues that emerge in the initial questionnaire, and it ensures the replicability of the constructs used for the actual study, as it helps to evaluate the construct validity and reliability. As recommended by Hagel (2014), the unidimensionality of a construct can be put to the test using Principal Component Analysis (PCA). The items' dimensionality as a representation of a common, latent construct can also be tested using Exploratory Factor Analysis (EFA) (Ziegler & Hagemann, 2015). When a researcher seeks to represent the variance in the latent constructs using smaller number of variables, the Varimax Rotation method would be the

best method to use. Moreover, it also maximizes the variance in all constructs' factor loadings in a factor matrix. Russel (2002) added that the method uses factor intercorrelations to distinguish the original variables through the extracted factors.

In short, abundant items and latent constructs in a study indicate that the Varimax Rotation method will reduce them into fewer factors. The number of items and latent constructs must be reduced so that the critical dimensions that affect the structure and criterion variables could be identified and follow-up analyses can be done. Also, the method helps identify the correlations between items and enhance the understanding of the structure of the variables (Field, 2013). To ensure that the pilot test result can be replicated, the model construct was tested using a measurement model, and suggestions by Brandt et al. (2014), Cohen, Manion, and Morrison (2007), and Maniadis, Tufano, and List (2017) are considered.

3.6 Data Examination and Preparation

As the first step, the author did both the editing and checking of the online survey responses. These two processes will assist the researcher to identify errors or if he needed to make omissions, so that the minimum standard set for quality data is achieved. This study disregarded incomplete responses, so there were no valid responses. Non-response bias may lead to the omission of meaningful data. Yüksel (2017) explained that with careful treatment of the non-response bias this can ensure that the result can be completely validated and higher variances in the estimates can further be mitigated.

3.7 Psychometric Test

As stated by Hagel (2014), unidimensionality is required in the psychometric theory testing, whereas Ziegler and Hagemann (2015) suggested that the dimensionality of items should stand to be the main objective of a psychometric test. PCA and EFA are employed to match the studied variables with the scale items, and they are then represented as a common, latent construct.

When a researcher aims to represent the variance using fewer variables in the latent constructs, it is reasonable for him to use the Varimax Rotation method. This method maximizes the variance in all constructs' factor loadings in a factor matrix. Byrne (2010) explained that in the method factor intercorrelations are adopted to differentiate the original variables through extracted factors. In short, if there are abundant items and latent constructs in a study, the Varimax Rotation method will have to lessen the number into fewer factors. The number of items and latent constructs should be lesser, so that the critical dimensions that impact the structure and criterion variables could be identified for further examination. The method also assists in identifying the correlations between items and helps the researcher to understand the variable structure much better (Field, 2013). For confirming the factor structure and specifying how the construct is measured, the Confirmatory Factor Analysis (CFA) is performed in the second stage of psychometric testing (Byrne, 2010).

EFA is a data-driven method and therefore it must be dealt with carefully (Gravetter & Wallnau, 2014; Ziegler, 2015). In contrast, the concerns of theory-driven methods and the aims of the study could be put on a balance by using CFA (Anderson & Gerbing, 1988; Gravetter & Wallnau, 2014). Some studies

have shown strong support for EFA, as the latter can facilitate the exploration into the latent variable structure of a dataset, but others cite CFA as the more commendable method (Sekaran and Bougie 2010; Byrne 2010); hence, the dataset obtained must first be tested for suitability with the model through an a priori hypothesis.

In this study, the constructs' unidimensionality was verified using PCA and EFA, and this is followed by the assessment of a new factor structure extraction. The model specification, however, was measured using CFA so the factor structure might yield small differences (Ziegler, 2014).

3.8 Model Specification

The measurement model—a major component of SEM—shows the relationship between latent variables and their indicators. According to Hagel (2014), unidimensionality is required when testing the psychometric theory, whereas Ziegler and Hagemann (2015) suggested the dimensionality of items should be the first in the list of objectives of a psychometric test. CFA helps to identify the scale items that should indicate a common, latent construct. Due to factor inter-correlations, the first-order, second-order, and third-order model specifications are affected by the extracted factors in the sense that the original variables measured could be different (Russell, 2002). The analysis will further reduce the many latent constructs and items into fewer factors. This has to be done, so that the critical dimensions affecting structure and criterion variables could be identified which may facilitate further analyses.

3.9 Convergent Validity

The instrument construct validity must be tested to make sure that the construct convergent validity is reached and the model fit can be tested. A validity test was carried out for the first-order, second-order, and third-order models to look into the processes that take place in the instrument (Cooper & Schindler, 2008). According to Guion (1980), validity is interpreted as the degree to which an instrument measures the operational and conceptual definitions. To make sure that meaningful measurements can be taken, the sensitivity of the measurement tool to situational and temporal changes has to be highlighted as an important factor (Cooper and Schindler, 2008). These are consistent with Kline (2010), who pointed out that convergent validity is the extent to which a set of items are presumed to measure a construct.

According to Fornell and Larcker (1981), the average variance extracted (AVE) can help determine whether or not the order constructs have come to the convergent validity. In sum, AVE makes its assessment on the variance of a construct against the variance based on the measurement error. Construct discriminant validity is established when each latent construct has an AVE > 0.50, which also points to high convergent validity. According to Hair et al. (2010), factor loading can also be regarded as an important element to establish discriminant validity at the construct level. Higher factor loadings or factor loadings more than 0.50 ($\lambda > 0.50$) would indicate high convergent validity.

3.9.1 Test For Model Fit

Model fit assessment aims to measure and verify the adequacy of first-order, second-order, and third-order models. The usual fit indices used in this assessment are the chi-square (χ^2) index and degree of freedom (df). That said, previous works- Bollen (1990), Byrne (2010), Hooper, Coughlan, & Mullen (2008), and Miles and Shevlin (2007) stated that other fit indices are equally good to assess the model fit. Moreover, Arbuckle (2006), Byrne (2010) and Hooper et al. (2008) viewed that when evaluating the structural equation model, the researcher should use at least four common fit indices.

The previous studies have mentioned some common fit indices such as Byrne (2010) and Hair et al. (2010), are the Comparative Fit Index (CFI), the Normed-fit Index (NFI), the Tucker-Lewis Index (TLI), the Goodness-of-Fit (GFI), and the Root Mean Square Error of Approximation (RMSEA). Bollen (1990), Kline (2010) and Miles and Shevlin (2007) recommended however, that instead of simply using the model of χ^2 and GFI, the researcher should also use indices in combination i.e. relative χ^2 ($\chi^2/d.f$), CFI, NFI, TLI and RMSEA, owing to the indices' high sensitivity to sample sizes. SEM assumes that this approach has a fundamental task in becoming the basis for accepting one specific model. A summary of the study's observed model fit indices and the acceptable threshold is illustrated in Table 3.2.

3.9.1.1 Chi-square (χ^2) model and Relative χ^2 ($\chi^2/d.f$)

A fundamental measure used in SEM, chi-square (χ^2) calculates the differences between the observed and estimated covariance matrices (Hair et al., 2010). The χ^2 value, proposed by Hu and Bentler (1999), can measure the sample and fitted

covariance matrix differences conventionally. Byrne (2010) mentioned that the possibility that a χ^2 value that exceeds the χ^2 value is obtained, is indicated by the probability value associated with χ^2 , conditioned by the fact that the model-specific matrices under study are valid; in other words, the null hypothesis is true. Therefore, under this null hypothesis, the closer the fit between the hypothesized models, the higher the probability associated with χ^2 . Kline (2010) further offered a definitive threshold of 0.05 to indicate whether a model has a good fit, a bad fit, or a lack of fit (Mulaik et al., 1989). Nonetheless, Tabachnick and Fidell (2007) stated that a value of less than 5.0 should be the cut-off value, or a value of less than 3.0, on the condition that the sample size lies between 100 and 200 (Tabachnick & Fidell, 2007).

As it is sensitive to sample sizes, χ^2 statistics could reject models that have sample sizes that are too small or too large (Bentler & Bonnet, 1980; Kenny & McCoach, 2003). Due to this, Wheaton, Muthen, Alwin, & Summers (1977) proposed another measure that uses the number of unique covariance and variances in the observed covariance matrix as a basis, i.e. relative χ^2 ($\chi^2/d.f.$), also known as normed χ^2 , estimating the model parameters by measuring the mathematical information available (Hair et al., 2010). Past studies considered the varying acceptance values for $d.f.$; Tabachnick and Fidell (2007) and Ullman (2001) suggested a value of less than 2.0; Kline (2010) with a value of less than 3.0; while Bentler (1990), Marsh, Hau, & Wen (2004), Schumacker and Lomax (2004), and Wheaton et al. (1977) proposed a value of less than 5.0 given the condition that (Bentler, 1990; Marsh et al., 2004) the sample size is not more than 200.

3.9.1.2 Comparative Fit Index (CFI)

Bentler (1990) amended the NFI (Byrne, 2010) and came up with the CFI, which deals with the aspect of fit underestimation in small samples (Bentler, 1990; Tabachnick & Fidell, 2007). Other than its lesser sensitivity to the sample size, Tabachnick and Fidell (2007) also threw some light on the NFI's popularity, especially its prevalence in SEM programs. Therefore, CFI is the best index to use when it comes to AMOS reporting, according to Bentler (1990).

Bentler (1990) and Kline (2010) explained that CFI works on the belief that there is no correlation between all variables, and then the fit of the target model is compared to that of the independent model. A model with a CFI value of more than 0.90 is seen as having a good fit (Bentler, 1990; Hatcher, 1994). According to Forza and Filippini (1998), a lower CFI value (greater than 0.80) also indicates a good model fit. Elsewhere, a CFI value close to 0.95 indicated a superior and better model fit (Hu & Bentler, 1999).

3.9.1.3 Normed-fit Index (NFI)

Bentler and Bonnet (1980) first proposed the NFI, in which it compared the χ^2 of the null model to evaluate the model. NFI also makes an assumption that there is no correlation between all the variables measured. Forza and Filippini (1998) and Greenspoon and Saklofske (1998) suggested a good fit only if NFI > 0.80. Next, Bentler and Bonnet (1980) recommended NFI > 0.90 to indicate a good model fit. Nonetheless, one study found that sample sizes of less than

200 will not gain any benefit from NFI as the index will become unreliable at that point (Kline, 2010) but Bentler (1990) and Mulaik et al. (1989) proved the opposite, for instance, NFI was still found to be reliable when it indicates a model's goodness of fit with a sample size more than 200. NFI can work with complex models and prove their goodness of fit and is therefore preferred in this study context (Bentler, 1990; Kline, 2010; Tabachnick & Fidell, 2007).

3.9.1.4 Tucker-Lewis Index (TLI)

The Non-Normed Fit Index (NNFI), or the Tucker-Lewis Index (TLI), was developed to deal with the weaknesses of the Normed Fit Index (NFI) (Anderson & Gerbing, 1988). The TLI is an incremental fit index with higher values suggesting that there is a better model fit. Nevertheless, TLI should have a range of 0.80 to more than 0.95 to show a good model fit, according to Bentler (1990) and Hair et al. (2010), Hu and Bentler (1999), and Tabachnick and Fidell (2007). Byrne (2010) stated that many have proposed a cut-off value of 0.90 indicating an acceptable model fit. The greatest strength of TLI is that it is not affected in a significant way by the sample size (Byrne, 2010; Hu & Bentler, 1999).

3.9.1.5 Root Mean Square Error of Approximation (RMSEA)

Serving as an important criterion in the covariance structure modeling, RMSEA measures the error of approximation in the population (Byrne, 2010). One study elaborated that RMSEA could fit a model best with unknown parameter values

into population covariance (Browne & Cudeck 1993). The RMSEA value has a 0.00-to-1.00 range. Byrne (2010), MacCallum, Browne, & Sugawara (1996), and Steiger (1998) recommended an RMSEA threshold value of less than 0.08 showing a good fit, whereas other studies proposed values of less than 0.05 and 0.06 (Browne & Cudeck, 1993; Hu & Bentler, 1999). This study believes that it was more realistic to use the value not more than 0.08 rather than less than 0.06 exact fit, so the former threshold value was selected.

Table 3.2: The fit indices of the observed model and acceptable threshold value for this study

Fit Indices	Recommended Threshold Value	Sources
Chi-square (χ^2) (Given a 100 to 200 sample size)	< 0.50 < 0.30	Tabachnick and Fidell, (2007); Ullman (2001); Kline (2005)
Relative χ^2 ($\chi^2/\text{d.f}$) (Given a more than 200 sample size)	< 2.0 < 3.0 < 5.0	Bentler (1990); Wheaton et al. (1977); Ullman (2001); Marsh et al. (2004); Schumacker and Lomax (2004); Kline (2005); Tabachnick and Fidell (2007)
Comparative Fit Index (CFI)	> 0.80 > 0.90 > 0.90 > 0.95	Bentler (1990); Hatcher (1994); Forza and Filippini; (1998); Hu and Bentler (1999)
Normed-fit Index (NFI)	> 0.80 > 0.80 > 0.90	Forza and Filippini (1998); Greenspoon and Saklofske (1998);

Fit Indices	Recommended Threshold Value	Sources
		Bentler and Bonnet (1980)
Tucker-Lewis Index (TLI)	> 0.80 > 0.80 > 0.90 > 0.95 > 0.95	Bentler (1990); Hair et al. (2010); Byrne (2010); Hu and Bentler (1999); Tabachnick and Fidell (2007)
Root Mean Square Error of Approximation (RMSEA)	< 0.08 < 0.08 < 0.08 < 0.06 < 0.05	Browne and Cudeck (1993); MacCallum et al. (1996); Steiger (1998); Hu and Bentler (1999); Byrne (2010)

3.10 Discriminant Validity

The measurement model discriminant validity checks on the latent variable relationships. Previous studies did stress on the importance of measuring construct unidimensionality before conducting tests to check for multidimensionality (Hagel, 2014; Ziegler & Hagemann, 2015). To ensure the

study's replicability of the study and the results' valid interpretation, nomological items should be defined and interpreted, so the construct unidimensionality has to be examined in advance. Moreover, discriminant validity can aid in the determination of the first-order measurement model's variable correlation as well as the variables' structure (Field, 2013). Therefore, the variables of the model and the dataset in this study were tested for any association with the other.

The validity test was done to test all order constructs of this study. The extent to which a construct is truly distinct from another construct was measured using CFA. The assumption made is that sufficient discriminant validity is achieved when the square of correlations (r^2) of the two latent variables (or manifest variables) are no larger than their AVEs (Fornell & Larcker, 1981). This study established that all correlated constructs had ample discriminant validity.

3.10.1 Test of Normality and Outliers

Skewness and kurtosis function as the indicators of the normality of data (Hair et al., 2010). However, in an SEM analysis that also uses AMOS, a critical assumption is that the data must be multivariate normal. The distribution balance in a dataset is described using skewness and the "flatness" or "peakness" of the distribution is described using kurtosis. Data distributed in an unbalanced manner is skewed; if the distribution is more to the left, it is positively skewed, and this works the other way around too. There would be acceptable normality if the kurtosis and skewness values are ± 1 (Marcoulides

& Hershberger, 1997) under 0.05 significance level with a z-statistic value of not more than 5.0 (Bentler & Satorra, 2010). In this study, a normality assessment was carried out using SEM-AMOS where normality was achieved with a skewness value of ± 2 (Gravetter & Wallnau, 2014) and a kurtosis value of ± 7 (Byrne, 2010) at 0.05 significance level.

In a specific dataset, a score that is significantly different than others is called an outlier. Kline defined univariate outliers as single variables with extreme scores, and a multivariate outlier consists of two or more variables with the highest scores. This study identified multivariate outliers using SEM-AMOS, in which the squared Mahalanobis distance (D^2) was calculated. The standard deviation units of the sample mean for all variables (centroid) and a set of scores for one case were calculated this time (Blair & Zinkhan, 2006). As elaboration, serious multivariate outliers are present if the D^2 values are distinctively distant from all other D^2 (Byrne, 2010). It is further explained that outliers are potentially present if, commonly, both $p_1 = 0.000$ and $p_2 = 0.000$ and the D^2 values are high. It is suggested then that these cases are to be deleted so that the number of serious multivariate outliers is reduced.

3.11 Structural Model

The Social Sciences is increasingly using SEM, with the technique fast becoming one of the most dominant multivariate techniques of late (Hair et al., 2010). There are three SEM strategies normally used in the estimation of complex relationships: (1) confirmatory, (2) competing, and (3) model development.

The assessment of the causality between the studied variables presented in the research framework was performed using SEM. The properties of SEM are further depicted as follows (Hardy & Bryman, 2004, p.35):

“SEM is the only analysis that allows complete and simultaneous tests of all relationships when the phenomena of interest are complex and multidimensional.”

Following the above statement, and according to Byrne (2010), Tomarken and Waller (2005), and Schreiber, Nora, Stage, Barlow, & King (2006), SEM can help estimate the strength of relationships hypothesized between variables in the theoretical model and was therefore adopted for this study. To add, with SEM, the researcher will be able to create more advanced and sophisticated theories (Williams, Gavin, & Hartman, 2004).

The hypothesized model in this study had used the confirmatory modeling strategy. There was an explanation by Kline (2010) that with this strategy, as the researcher provides the model specification, he or she could determine whether or not the model is compatible the data. However, according to Byrne (2010) and Hair et al. (2010), a model with a good fit is only confirmed as one of the several possibly acceptable models and it might not be a proven model.

Byrne (2010) stated that SEM-AMOS must include three fundamental levels to make sure that the running of SEM procedures is appropriate. Nevertheless, Hair et al. (2010) recommended a more comprehensive six-stage SEM process, adopted in this study. The measurement theory–structural theory relationship (construct representation–construct relationship) was assessed and Figure 3.2 outlines the process.

3.12 Summary

This chapter focuses on the data collection method and research design. The data collection efficiency was increased by running the instrument pilot test. The discussion on the techniques used for data analysis can also be found in this chapter.

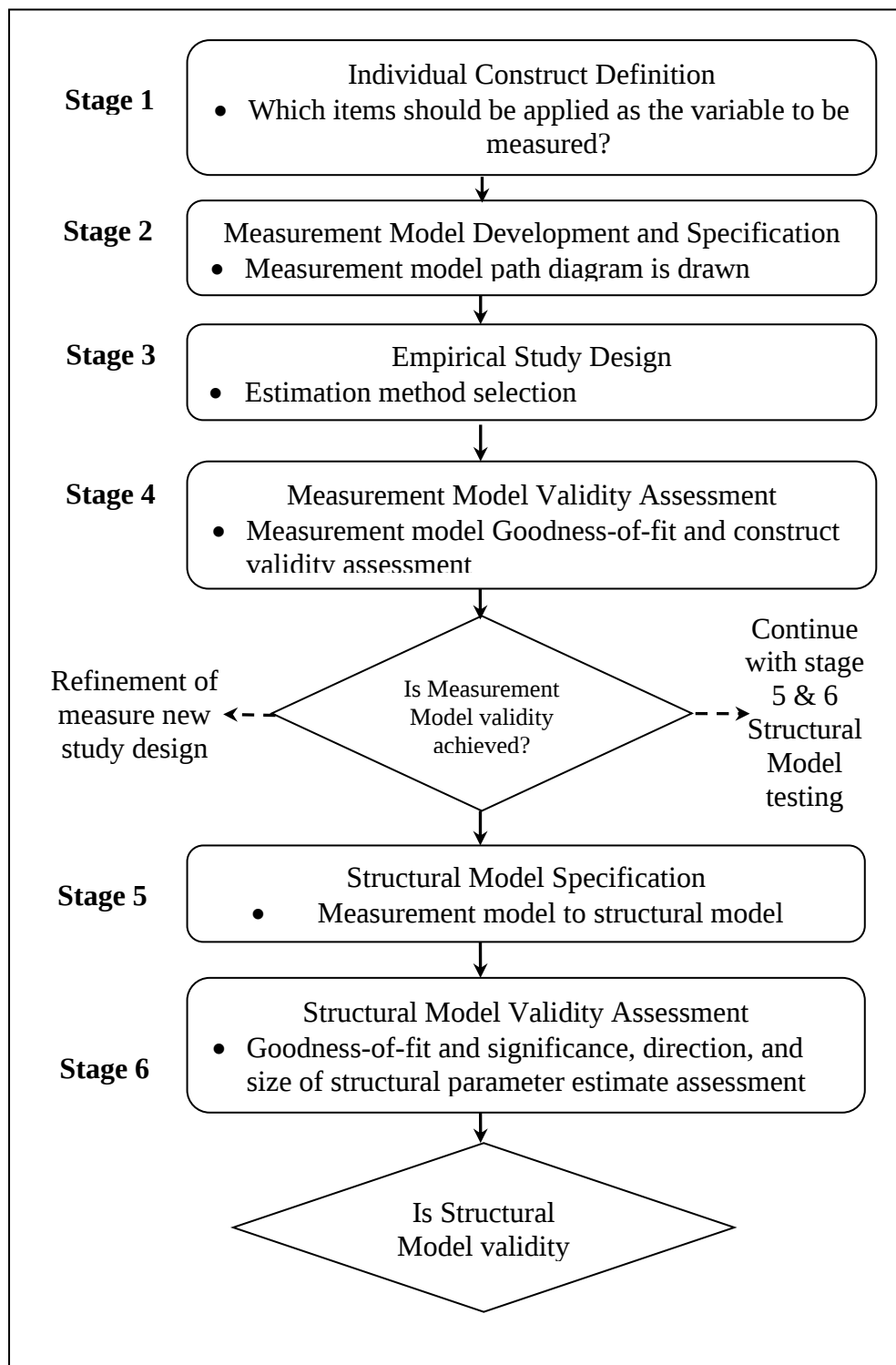


Figure 3.2: The SEM Six-Stage Process

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Overview

The tests that analyze the hypotheses proposed in this study are described in this four-section chapter. The pilot test result is presented in Section 4.2. The respondents' profile and descriptive statistics results are outlined in Section 4.3. Section 4.4 elaborates on the measurement models of the variables investigated. Section 4.5 then sheds light on the structural model to confirm the hypothesized research framework.

4.2 Method of Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 18.0 (SPSS Inc., 2009) and Structural Equation Modeling (SEM) using AMOS version 18.0 (Arbuckle, 1995) were the tools used to study the collected data in this study. The pilot study was run with the SPSS while the measurement and structural models in this study were tested with the help of the SEM. Then, descriptive and frequency analyses helped to produce the general information about the respondents. Hair et al. (2010) mentioned that SEM permits the examination of

the hypothesized model via the simultaneous estimation of multiple equations and it is found to be suitable to this study.

4.3 Pilot Test

4.3.1 Data Examination

For pilot testing, 200 online questionnaires were distributed through the email and social media, namely WhatsApp application and Facebook for two weeks between 2 July 2017 and 16 July 2017. Out of the 200, only 170 respondents (85%) had responded. The responses received were checked and edited. Only 150 (75%) gave complete responses, while 20 responses were discarded as they did not complete the survey. The process of editing and checking will help the researcher to identify errors or omissions, so that the quality data achieves the minimum standard (Cooper & Schindler, 2008). Before the data analysis, the data was first transferred into SPSS 18.0 software.

From a total of 150 participants, 70 were male (46.7%) and 80 were female (53.3%). They are 21 to 42 years of age. All the participants were Emirati, and they were from Business and Accounting programs ($n = 110$, 73.3%) and 40 participants were from Engineering program (26.7%) respectively. These participants were in their fourth year of study.

Gravetter and Wallnau (2014) and Byrne (2010) set an acceptable limit for skewness and kurtosis of ± 2.0 and ± 7.0 , respectively. The data in this study was found to have skewness and kurtosis values that stay within these limits and was therefore had a normal distribution. Table 4.1 lists the descriptive analysis result of this study.

Table 4.1: Normality assessment result of the pilot study

	N	Mean	Std. Deviation	Skewness	Kurtosis		
					Std.		Std.
	Statistic	Statistic	Statistic	Statistic	Error	Statistic	Error
Complex problem-solving	150	5.3850	1.10620	-1.071	0.198	1.517	0.394
Critical thinking	150	5.2983	1.11754	-0.984	0.198	1.292	0.394
Creativity	150	5.0433	1.06016	-0.685	0.198	0.498	0.394
People management	150	5.0217	1.34487	-0.844	0.198	0.479	0.394
Coordinating with others	150	5.4483	1.26991	-0.911	0.198	0.647	0.394
Concern	150	5.5344	1.19599	-1.150	0.198	1.562	0.394
Control	150	5.5333	1.07874	-1.059	0.198	1.088	0.394
Curiosity	150	5.5244	1.11065	-1.114	0.198	2.041	0.394
Confidence	150	5.6833	1.16830	-1.170	0.198	1.419	0.394

Career Adaptability	150	5.5689	0.99327	-1.288	0.198	2.579	0.394
Valid N (listwise)	150						

4.3.2 Principal Component Analysis

The Harman's single-factor test was executed to confirm the existence of common method bias of data since the sample data were gathered based on undergraduate's perception of self-report. The unidimensionality of the studied variables was checked by carrying out the Principal Component Analysis (PCA) and nine-factors were extracted with cumulative variance explained of 72.35 percent, which stayed within an acceptable range (Tabachnick & Fidell, 2007). The Bartlett's test of Sphericity of $p < 0.000$ ($\chi^2 = 5323.504$, $df = 946$) gives evidence of statistical difference for the observed correlation matrix (Hair et al., 2010). The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) of 0.893 measures the shared variance of the items (Roscoe, 1975). The common method bias for this study was not significant as these results provided the strength of the relationships for the suggested factorability of the observed variables.

In addition, multicollinearity is non-existent and there were sufficient correlations between items, confirming that factor analysis can be performed (Abdi & Williams, 2010). Each scale has an eigenvalue more than 1.0 and a cumulative percentage variance of 41.816. Forty-four items for nine constructs were accepted, whereas ten items from each of the variable of the future skills was excluded from the studied construct. Hair et al. (2010) suggested that factors with cross-loadings and factor loading of less than 0.5 should be removed, so these items were eliminated from this study. Table 4.2 shows the 44 items examined in this study.

Table 4.2: Principal component analysis (pilot study)

Construct/Item	1	2	3	4	5	6	7	8	9
Complex problem-solving (CPS)									
CPS2	0.589								
CPS4	0.606								
CPS3	0.854								
CPS6	0.565								
Critical thinking (CT)									
CT6		0.647							
CT3		0.564							
CT7		0.703							
CT1		0.675							

Construct/Item	1	2	3	4	5	6	7	8	9
Creativity (CR)									
CR17			0.630						
CR8			0.549						
CR14			0.706						
CR19			0.758						
People Management (PM)									
PM3				0.827					
PM4				0.799					
PM2				0.857					
PM5				0.688					

Construct/Item	1	2	3	4	5	6	7	8	9
Coordinating with Others (COW)									
CWO5					0.773				
CWO4					0.806				
CWO3					0.704				
CWO1					0.683				
Career Adaptability: Concern									
C1						0.752			
C2						0.583			
C3						0.658			
C4						0.760			
C5						0.516			

Construct/Item	1	2	3	4	5	6	7	8	9
C6						0.622			
Career Adaptability: Control									
C7							0.579		
C8							0.760		
C9							0.771		
C10							0.771		
C11							0.784		
C12							0.678		
Career Adaptability: Curiosity									
C13								0.658	
C14								0.764	

Construct/Item	1	2	3	4	5	6	7	8	9
C15								0.677	
C16								0.736	
C17								0.712	
C18								0.591	
Career Adaptability: Confidence									
C19									0.837
C20									0.686
C21									0.678
C22									0.869
C23									0.518
C24									0.739

Construct/Item	1	2	3	4	5	6	7	8	9
Eigenvalue	18.399	2.708	1.916	1.822	1.675	1.360	1.297	1.230	1.137
% of Variance	41.816	6.154	4.354	4.140	3.808	3.090	2.947	2.795	2.584
Extraction Method: Principal Axis; Factoring Rotation Method: Varimax with Kaiser Normalization									

4.3.3 Reliability Test

Neuman (2003) stated that reliability is the extent to which homogeneous items in a set repetitively measure what they are intended to measure (Janetzko, 2008). In addition, the measurement's stability and consistency are also reflected by its reliability (Sekaran & Bougie, 2010). Therefore, the data would be considered as good if it is reliable (Burton & Mazerolle, 2011), otherwise it will be regarded as invalid.

This study gauged the internal consistency of the scale used through the Cronbach's alpha (CA) coefficient. The CA value should range from 0 to 1, where the higher the reliability, the closer the value is to 1. The CA also sheds light on the absence of the correlations between the items in a test. To add, the higher the CA value, the higher the internal consistency. Referring to a past study, the total items of measurement also impact the CA value (Tavakol & Dennick, 2011). That is, the fewer the items, the smaller the value of CA. Thus, Congeneric (2006) recommended increasing the CA value by including items that are related to test the same concept.

This study utilized the SPSS software to run the reliability test, where all six variables were investigated. The results have proven that each variable and dimension had sufficient internal consistency with a CA value more than 0.60. The Social Sciences accept a CA value of 0.6 as a threshold to indicate that the items are sufficient and acceptable (Flynn, Schroeder, & Sakakibara, 1994; Hair et al., 2010; Nunally & Bernstein, 1994).

Table 4.3 presents in our study a summary of the factor analysis also the reliability of the latent constructs.

Table 4.3: Exploratory factor analysis of the studied constructs (pilot study)

Construct/Item	1	2	3	4	5	6	7	8	9
Complex problem-solving (CPS)									
CPS2	0.854								
CPS4	0.799								
CPS3	0.775								
CPS6	0.740								
Critical thinking (CT)									
CT7		0.761							
CT1		0.813							
CT3		0.784							
CT6		0.731							

Construct/Item	1	2	3	4	5	6	7	8	9
Creativity (CR)									
CR17			0.881						
CR19			0.825						
CR14			0.747						
CR8			0.694						
People Management (PM)									
PM3				0.928					
PM4				0.879					
PM5				0.839					
PM2				0.866					

Construct/Item	1	2	3	4	5	6	7	8	9
Coordinating with Others (COW)									
CWO5					0.910				
CWO4					0.878				
CWO3					0.832				
CWO1					0.811				
Career Adaptability: Concern									
C1						0.773			
C2						0.611			
C3						0.713			
C4						0.712			
C5						0.665			

Construct/Item	1	2	3	4	5	6	7	8	9
C6						0.526			
Career Adaptability: Control									
C7							0.897		
C8							0.750		
C9							0.721		
C10							0.778		
C11							0.616		
C12							0.690		
Career Adaptability: Curiosity									
C13								0.691	
C14								0.790	

Construct/Item	1	2	3	4	5	6	7	8	9
C15								0.740	
C16								0.759	
C17								0.736	
C18								0.669	
Career Adaptability: Confidence									
C19									0.566
C20									0.748
C21									0.641
C22									0.632
C23									0.733
C24									0.761

Construct/Item	1	2	3	4	5	6	7	8	9
KMO	0.768	0.765	0.757	0.824	0.824			0.909	
Bartlett's test	$\chi^2 = 186.251$, df = 6, p < 0.000	$\chi^2 = 152.793$, df = 6, p < 0.000	$\chi^2 = 174.264$, df = 6, p < 0.000	$\chi^2 = 382.570$, df = 6, p < 0.000	$\chi^2 = 321.417$, df = 6, p < 0.000			$\chi^2 = 2752$, df = 276, p < 0.000	
Eigenvalue	2.516	2.389	2.444	3.087	2.949	11.937	1.881	1.173	1.414
% of Variance	62.905	59.726	61.103	77.169	73.717	79.735	7.838	4.886	4.753
CA	0.803	0.774	0.787	0.899	0.880			0.955	

Extraction Method: Principle Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Note: Kaiser-Meyer-Olkin: KMO; Bartlett's test of Sphericity: χ^2 ; p-value: significance value of below 0.50; CA: Cronbach's alpha

4.3.4 Confirmatory Factor Analysis of Pilot Test

Furthermore, CFA was performed to examine the adequacy of convergent and discriminant validity for the studied variables. The threshold proposed for adequate convergent and discriminant validity is an r^2 not more than the AVEs (Byrne, 2010), a composite reliability (CR) ≥ 0.60 , factor loadings ≥ 0.5 , AVEs > 0.50 (Kline, 2010), and a CA > 0.60 , (Nunally & Bernstein, 1994; Raykov, 1998), all of which were successfully met (Hair et al., 2010; Kline, 2010). There was no indication of multicollinearity due to the fact that all correlation values were less than 0.85 (Cohen, 1992). In this study, variable sensitivity and sample size insensitivity was observed, thus a cut-off value of more than 0.80 for CFI (Forza & Filippini, 1998), NFI (Forza & Filippini, 1998), and TLI (Bentler, 1990; Hair et al., 2010), less than 3.0 for χ^2 (Kline, 2010), and less than 0.08 for RMSEA (Byrne, 2010; MacCallum et al., 1996; Steiger, 1998) were adjusted. The study results ($\chi^2 = 1866.793$; $df = 856$; CFI = 0.959; NFI = 0.845, TLI = 0.948 and RMSEA = 0.076) show that the goodness-of-fit indices were acceptable, and with the main study can be replicated (Brandt et al., 2014; Cohen et al., 2007; Maniadis et al., 2017). Table 4.4 established the correlation, the Cronbach's Alpha values, composite reliability values, and AVEs for the variables studied.

Table 4.4: The correlation, r^2 , the AVEs, composite reliability, and Cronbach's alpha values of the studied variables (pilot study)

	1	2	3	4	5	6	7	8	9	10
Career adaptability (CA)	1									
2. Complex problem-solving (CPS)	0.695** (0.483)	1								
3. Critical thinking (CT)	0.747** (0.558)	0.632** (0.399)	1							
4. Creativity (CR)	0.623** (0.388)	0.415** (0.172)	0.582** (0.339)	1						
5. People management (PM)	0.549** (0.301)	0.328** (0.108)	0.379** (0.144)	0.497** (0.247)	1					
6. Coordinating with others (COW)	0.639** (0.408)	0.484** (0.234)	0.493** (0.243)	0.463** (0.214)	0.479** (0.229)	1				
7. Concern		0.582**	0.668**	0.588**	0.524**	0.595**	1			

	1	2	3	4	5	6	7	8	9	10
		(0.339)	(0.446)	(0.346)	(0.275)	(0.354)				
8. Control		0.597**	0.663**	0.526**	0.542**	0.546**	0.737**	1		
		(0.356)	(0.440)	(0.277)	(0.294)	(0.298)	(0.543)			
9. Curiosity		0.582**	0.608**	0.516**	0.406**	0.490**	0.597**	0.583**	1	
		(0.339)	(0.370)	(0.266)	(0.165)	(0.240)	(0.356)	(0.340)		
10. Confidence		0.664**	0.664**	0.539**	0.446**	0.593**	0.739**	0.743**	0.682**	1
		(0.441)	(0.441)	(0.291)	(0.199)	(0.352)	(0.546)	(0.552)	(0.465)	
AVE	0.738	0.528	0.437	0.493	0.698	0.654	0.607	0.533	0.594	0.561
CA	0.857	0.726	0.661	0.694	0.646	0.806	0.777	0.726	0.763	0.744
CR	0.918	0.817	0.756	0.792	0.848	0.882	0.902	0.871	0.896	0.883

Note: ** Correlation is significant at the 0.01 level (2-tailed); r^2 are in parentheses; AVE is Average Variance Extracted; CR is Composite Reliability; CA is Cronbach's alpha

4.3.5 Summary of Pilot Test

Since the sample for pilot study ($n = 150$) is substantive, PCA, EFA, and CFA were conducted to show the data's internal structure to best explain the data variance. According to Bentler (1990), Marsh et al. (2004), and Tabachnick and Fidell (2007) the test for model fit is suggested for the reported sample of more than 100. The pilot test also provides sufficient convergent and discriminant validity of the data, as no discriminant validity problem was detected when reference is made to the results of the construct inter-correlations. These analyses, therefore, point to the fact that the instrument used in this study was reliable, consistent, and stable. The reliability analysis for the pilot data would go for the goodness of the data, so the pilot test provides evidence to confirm that the measures used in the main study are able to perform replication.

4.4 Main Study

The main study was conducted between 1 August 2017 and 28 February 2018. During this period, a total of 700 online questionnaires were distributed to undergraduate students all over Abu Dhabi Emirate, UAE, all of whom were told that they would remain anonymous and who had consented to this. The students must have undergone a minimum of 90 credit hours learning about and experiencing shared curricular practice, also participated in co-curricular activities and experiences (collaborative learning). Based on these criteria, only 72 percent (503) of the subjects were found qualified. Out of the 503, only 420 (60%) responses were complete, and the feedback was consistent. Meanwhile, 83 incomplete responses (12%) were extracted from the analysis to avoid

studying the missing data from being studied, as this will create inconsistency in the survey's primary results. The response rate of 72 percent sits well with the requirement for the generalization of study by Frohlich (2002) and is also consistent with Bartlett et al.'s (2001) generalizability of study requirement.

The responses dropped were largely from males from older age group that has a similar demographic profile. In this study, 220 females (52%) and 200 males (48%) gave valid responses. All were Emirati aged 21 to 35 years old ($M = 25$, $SD = 1.024$). The majority of respondents were in their fourth year. From 420 participants, 52.9 percent were from Business and Accounting programs ($n = 222$), while 47.1 percent were from the Engineering program ($n = 198$).

Since the skewness and kurtosis of the data stayed within the acceptable limits of ± 2.0 (Gravetter & Wallnau, 2014) and ± 7.0 (Byrne, 2010), respectively (Table 4.5), the data of the main study is deemed normally distributed.

Table 4.5: Results of Assessment of normality for the main study

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gender	420	1.52	0.500	-0.096	0.119	-2.000	0.238
Age	420	2.24	1.024	1.282	0.119	2.111	0.238
Program	420	1.43	0.960	0.872	0.119	0.254	0.238
Year	420	1.25	1.022	-0.407	0.119	-1.041	0.238
Complex problem-solving (CPS)	420	5.39	1.038	-1.048	0.119	1.437	0.238
Critical thinking (CT)	420	5.31	1.016	-.987	0.119	1.652	0.238
Creativity (CR)	420	5.06	1.036	-.446	0.119	0.096	0.238
People management (PM)	420	5.12	1.311	-.998	0.119	0.903	0.238
Coordinating with others (COW)	420	5.47	1.188	-1.035	0.119	1.334	0.238

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Curiosity	420	5.51	1.038	-1.139	0.119	2.037	0.238
Confidence	420	5.78	1.021	-1.300	0.119	2.309	0.238
Career Adaptability (CA)	420	5.66	0.909	-1.377	0.119	3.207	0.238
Valid N (listwise)	420						

4.4.1 Psychometric Testing

Since the sample data were gathered leaning on undergraduate's perception of self-report, the Harman's single-factor test was carried out to confirm the existence of the common method bias of data. The unidimensionality of the studied variables was checked using the Principal Component Analysis (PCA) and nine-factors were extracted with cumulative variance explained of 80.12 percent, which range was acceptable (Tabachnick & Fidell, 2007). The Bartlett's test of Sphericity of $p < 0.000$ ($\chi^2 = 13324.461$, $df = 946$) offers evidence of statistical difference for the observed correlation matrix (Hair et al., 2010). The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) of 0.946 measures the shared variance of the items (Roscoe, 1975). The common method bias for this study was not significant because these results mark the strength of the relationships for suggested factorability of the observed variables. It has been shown by the analysis that 44 items with nine variables were statistically significant and important, and there was no multicollinearity. There were sufficient correlations between items, which confirm that a factor analysis can be done (Abdi & Williams, 2010). Each scale had an eigenvalue of more than 1.9 and a 40.341 cumulative percentage variance.

EFA was then conducted based on the suggestion of Ziegler and Hagemann (2015), and all studied variables were differentiated. All six latent constructs were grouped into latent variable structures and they were statistically discriminant with a KMO measure of sampling adequacy of more than 0.70, and a significant Bartlett's test of Sphericity ($p < 0.000$), indicating that the issue here is not multicollinearity.

All the variables and dimensions studied had sufficient internal consistency based on the Cronbach's alpha values, which were all well above 0.60 (Nunally & Bernstein, 1994), The Social Sciences accept a CA value of 0.6 as a threshold indicating sufficient and acceptable items (Flynn et al., 1994; Hair et al., 2010). Table 4.6 shows a list of the 44 items used in this study while Table 4.7 summarizes the factor analysis also the reliability of the latent constructs.

Table 4.6: Principal component analysis (main study)

Construct/Item	1	2	3	4	5	6	7	8	9
Complex problem-solving (CPS)									
CPS2	0.749								
CPS4	0.695								
CPS3	0.802								
CPS6	0.535								
Critical thinking (CT)									
CT6		0.617							
CT3		0.682							
CT7		0.651							
CT1		0.691							
Creativity (CR)									
CR17			0.777						

Construct/Item	1	2	3	4	5	6	7	8	9
CR8			0.749						
CR14			0.755						
CR19			0.730						
People Management (PM)									
PM3				0.836					
PM4				0.832					
PM2				0.849					
PM5				0.793					
Coordinating with Others (COW)									
CWO5					0.785				
CWO4					0.842				
CWO3					0.762				

Construct/Item	1	2	3	4	5	6	7	8	9
CWO1					0.763				
Career Adaptability: Concern									
C1						0.712			
C2						0.704			
C3						0.732			
C4						0.629			
C5						0.617			
C6						0.618			
Career Adaptability: Control									
C7							0.540		
C8							0.698		
C9							0.707		

Construct/Item	1	2	3	4	5	6	7	8	9
C10							0.713		
C11							0.653		
C12							0.538		
Career Adaptability: Curiosity									
C13								0.651	
C14								0.708	
C15								0.742	
C16								0.755	
C17								0.713	
C18								0.693	
Career Adaptability: Confidence									
C19									0.548

Construct/Item	1	2	3	4	5	6	7	8	9
C20									0.671
C21									0.518
C22									0.637
C23									0.703
C24									0.722
Eigenvalue	17.750	3.020	2.093	1.874	1.517	1.439	1.184	1.068	1.005
% of Variance	40.341	6.863	4.757	4.258	3.448	3.271	2.691	2.428	2.285

Extraction Method: Principal Axis Factoring

Rotation Method: Varimax with Kaiser Normalization

Table 4.7: Factor Analysis and Reliability of the Latent Constructs (main study)

Construct/Item	1	2	3	4	5	6	7	8	9
Complex problem-solving (CPS)									
CPS2	0.867								
CPS4	0.830								
CPS3	0.821								
CPS6	0.758								
Critical thinking (CT)									
CT7		0.776							
CT1		0.786							
CT3		0.799							
CT6		0.796							

Construct/Item	1	2	3	4	5	6	7	8	9
Creativity (CR)									
CR17			0.853						
CR19			0.818						
CR14			0.824						
CR8			0.695						
People Management (PM)									
PM3				0.921					
PM4				0.899					
PM5				0.883					
PM2				0.868					

Construct/Item	1	2	3	4	5	6	7	8	9
Coordinating with Others (COW)									
CWO5					0.855				
CWO4					0.917				
CWO3					0.870				
CWO1					0.842				
Career Adaptability: Concern									
C1						0.753			
C2						0.739			
C3						0.786			
C4						0.667			
C5						0.660			

Construct/Item	1	2	3	4	5	6	7	8	9
C6						0.618			
Career Adaptability: Control									
C7							0.616		
C8							0.740		
C9							0.724		
C10							0.697		
C11							0.683		
C12							0.579		
Career Adaptability: Curiosity									
C13								0.669	
C14								0.731	

Construct/Item	1	2	3	4	5	6	7	8	9
C15								0.755	
C16								0.784	
C17								0.747	
C18								0.720	
Career Adaptability: Confidence									
C19									0.630
C20									0.618
C21									0.614
C22									0.714
C23									0.736
C24									0.743

Construct/Item	1	2	3	4	5	6	7	8	9
KMO	0.790	0.771	0.784	0.847	0.831		0.948		
Bartlett's test	$\chi^2=660.932$, df=6, p<0.000	$\chi^2=500.455$, df=6, p<0.000	$\chi^2=565.047$, df=6, p<0.000	$\chi^2=1186.566$, df=6, p<0.000	$\chi^2=1001.771$, df=6, p<0.000		$\chi^2=0.7501.618$, df=276, p<0.000		
Eigenvalue	2.691	2.492	2.558	3.191	3.038	12.530	1.594	1.205	1.046
% of Variance	67.281	62.305	63.956	79.766	75.960	52.207	6.641	5.022	4.358
CA									

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Note: Kaiser-Meyer-Olkin: KMO; Bartlett's test of Sphericity: χ^2 ; p-value: significance value of below 0.50; CA is Cronbach's alpha

4.4.2 First-Order Model

A CFA was performed on each variable under study. The measurement model for all variables had been confirmed. Skewness is acceptable if the value is ± 2.0 (Gravetter & Wallnau, 2014) while kurtosis is acceptable with the value of ± 7.0 (Byrne, 2010). Values within this range signifies that the data is normally distributed (Cain, Zhang, & Yuan, 2017; Yalçınkaya, Şenoğlu, & Yolcu, 2018).

There is proof that factor loadings and AVEs were greater than 0.50 (Hair et al., 2010; Kline, 2010). The CRs and CAs were well above 0.60 (Nunally & Bernstein, 1994; Raykov, 1998), indicating that the variables in this study had good convergent validity (Byrne, 2010). In addition, sufficient discriminant validity was demonstrated using all nine constructs or six variables in this study with AVEs greater than r^2 and a correlation between 0.338 ($r^2 = 0.114$) and 0.824 ($r^2 = 0.678$) at $p < 0.01$ (Table 4.8).

Figure 4.1 to Figure 4.9 demonstrate satisfactory goodness-of-fit of all first-order models in this study. These first-order models fulfil all the cut-off values for $\chi^2/d.f$ (less than 3.0), RMSEA (less than 0.80), and CFI, NFI, and TLI (more than 0.80), as aforementioned. Byrne (2005) mentioned that although correlated errors were hotly debated in the literature, there are many situations, especially on social psychological research, in which these parameters can make strong substantive sense and thus should be included in the model. Brown (2015) agreed that to support their specification, the model fitting must be substantially meaningful through fit indices.

Furthermore, it was also evidenced that the interclass correlation coefficient (ICC) for complex problem solving was between 0.810 and 0.888 at

0.861 percent confidence interval, critical thinking between 0.763 and 0.827 at 0.95 percent confidence interval, creativity between 0.779 and 0.839 at 0.95 percent confidence interval, people management between 0.900 and 0.927 at 0.95 percent confidence interval, coordinating with others between 0.876 and 0.909 at 0.95 percent confidence interval, and career adaptability between 0.954 and 0.965 at 0.95 percent confidence interval, all of which pointing towards a good reliability (McGraw & Wong, 1996; Shrout & Fleiss, 1979) and exhibiting acceptable agreement measures (Cicchetti, 1994).

The tolerance values were between 0.526 and 0.706, and the variance inflation factor (VIF) was less than 5.0 (Montgomery, Peck, & Vining, 2001; Thompson, Kim, Aloe, & Becker, 2017). The collinearity assessment found no sign of multicollinearity (Hair et al., 2010). As suggested by Hayes and Li (2007), after the collinearity statistics is completed, heteroskedasticity with the Glejser test must be conducted to see if there is a difference in the residual variance observation period as compared to another period of observation. The heteroskedasticity test also ensures that the technique is robust for estimating the standard errors under model mis-specification (King & Roberts, 2015). The output coefficients have proven that complex problem-solving ($p = 0.051$), critical thinking ($p = 0.229$), creativity ($p = 0.052$), people management ($p = 0.069$), and coordinating with others ($p = 0.912$) were insignificant at $p > 0.05$, indicating that there was no heteroskedasticity issue.

Table 4.8: The correlation, r^2 , the AVEs, composite reliability, and Cronbach's alpha values of the studied variables

	1	2	3	4	5	6	7	8	9	10
Career adaptability (CA)	1									
2. Complex problem-solving (CPS)	0.627** (0.393)	1								
3. Critical thinking (CT)	0.628** (0.394)	0.736** (0.542)	1							
4. Creativity (CR)	0.542** (0.294)	0.459** (0.211)	0.632** (0.399)	1						
5. People management (PM)	0.443** (0.196)	0.338** (0.114)	0.370** (0.137)	0.473** (0.224)	1					

	1	2	3	4	5	6	7	8	9	10
6. Coordinating with others (COW)	0.519** (0.269)	0.453** (0.225)	0.446** (0.199)	0.441** (0.194)	0.528** (0.279)	1				
7. Concern		0.593** (0.352)	0.629** (0.396)	0.538** (0.289)	0.480** (0.230)	0.538** (0.289)	1			
8. Control		0.605** (0.366)	0.632** (0.399)	0.497** (0.247)	0.470** (0.221)	0.511** (0.261)	0.804** (0.646)	1		
9. Curiosity		0.614** (0.377)	0.628** (0.394)	0.554** (0.307)	0.435** (0.189)	0.679** (0.461)	0.694** (0.482)	0.703** (0.494)	1	
10. Confidence		0.512** (0.262)	0.380** (0.144)	0.552** (0.272)	0.382** (0.146)	0.708** (0.501)	0.778** (0.605)	0.824** (0.678)	0.760** (0.577)	1

	1	2	3	4	5	6	7	8	9	10
AVE	0.767	0.535	0.521	0.692	0.732	0.665	0.639	0.588	0.645	0.628
CA	0.875	0.730	0.719	0.832	0.654	0.815	0.798	0.762	0.800	0.790
CR	0.929	0.821	0.764	0.900	0.864	0.888	0.914	0.894	0.915	0.910

Note: ** Correlation is significant at the 0.01 level (2-tailed); r^2 are in parentheses; AVE is Average Variance Extracted; CR is Composite Reliability; CA is Cronbach's alpha

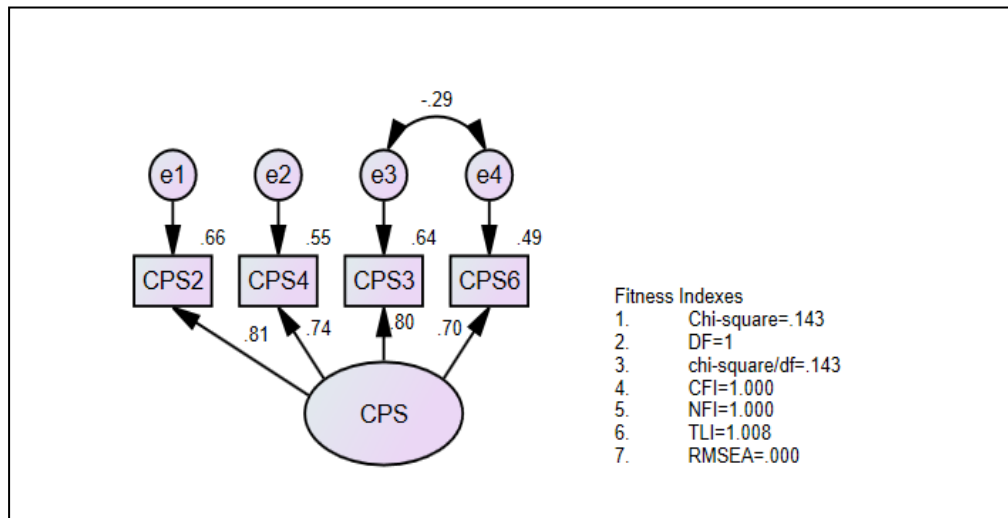


Figure 4.1: Complex Problem-solving (CPS) first-order model

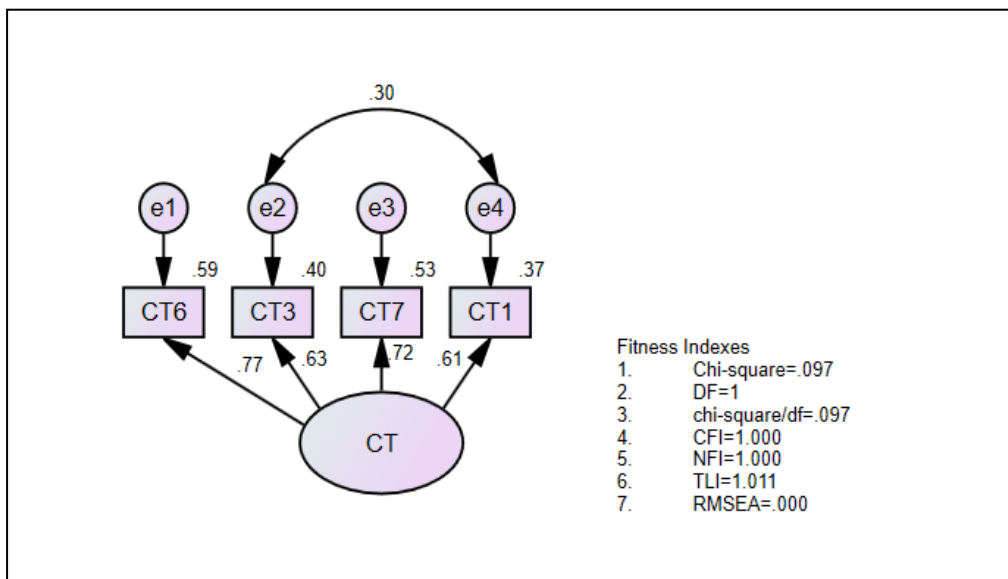


Figure 4.2: Critical Thinking (CT) first-order model

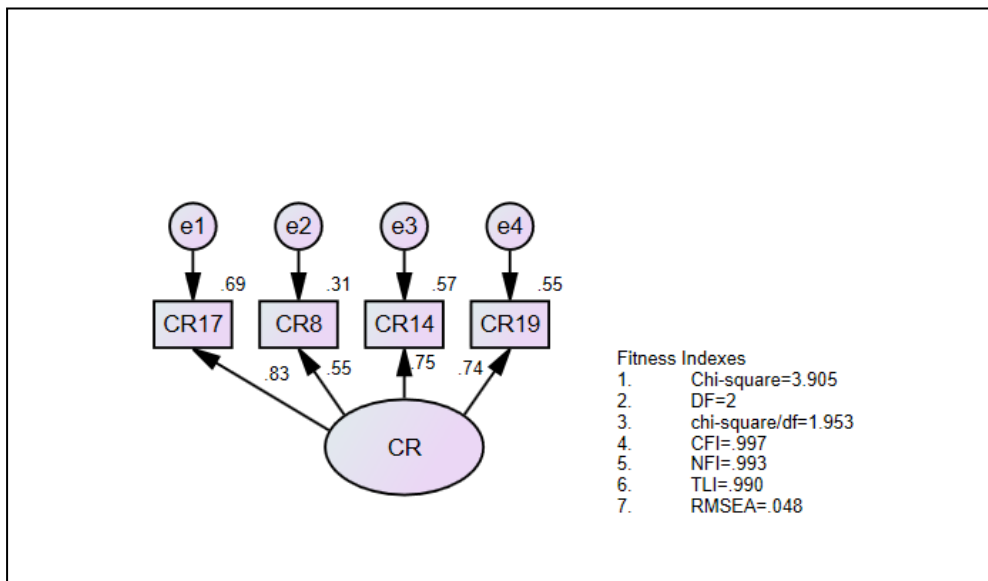


Figure 4.3: Creativity (CR) first-order model

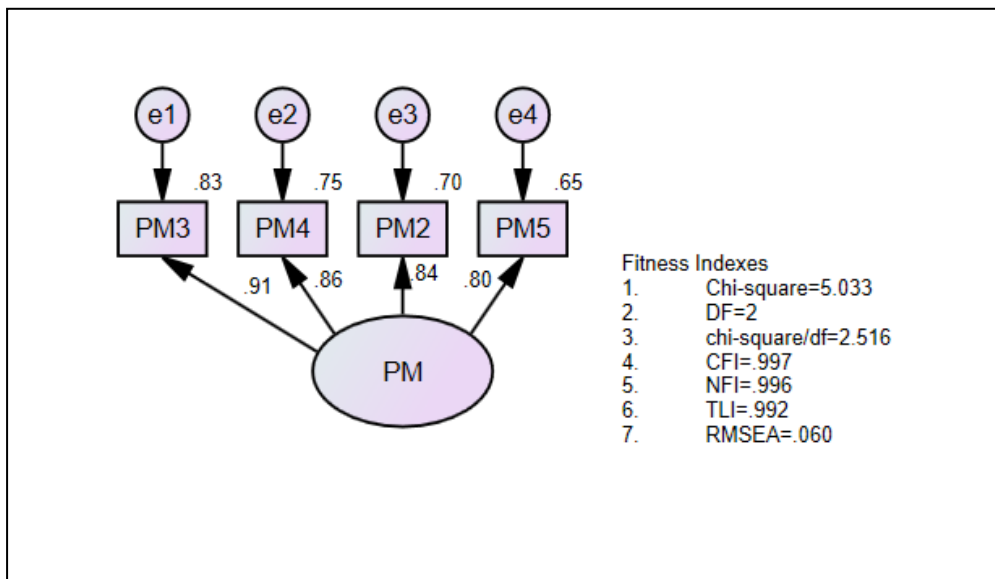


Figure 4.4: People Management (PM) first-order model

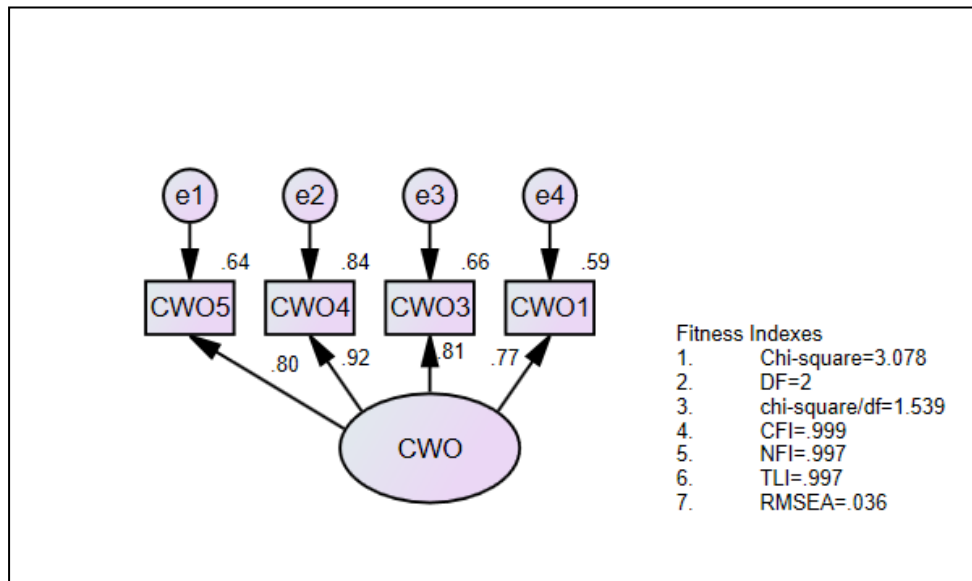


Figure 4.5: Coordinating with Others (CWO) first-order model

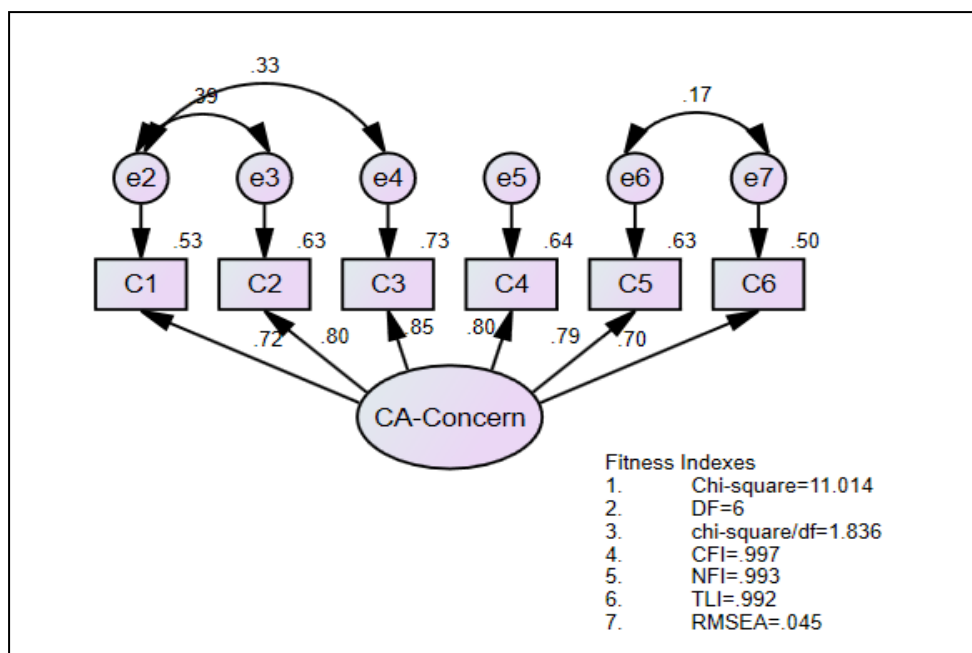


Figure 4.6: Concern first-order model

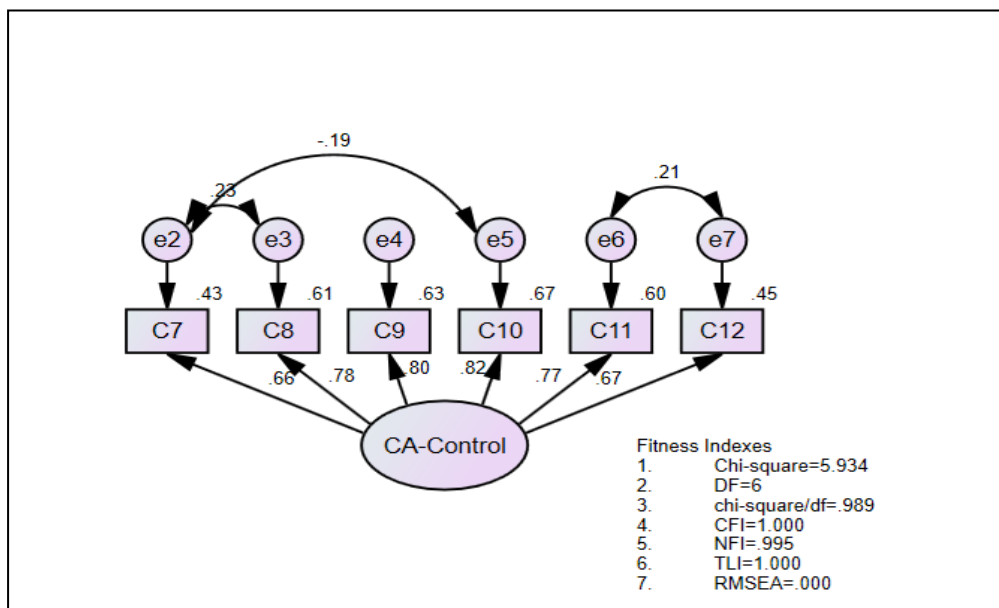


Figure 4.7: Control first-order model

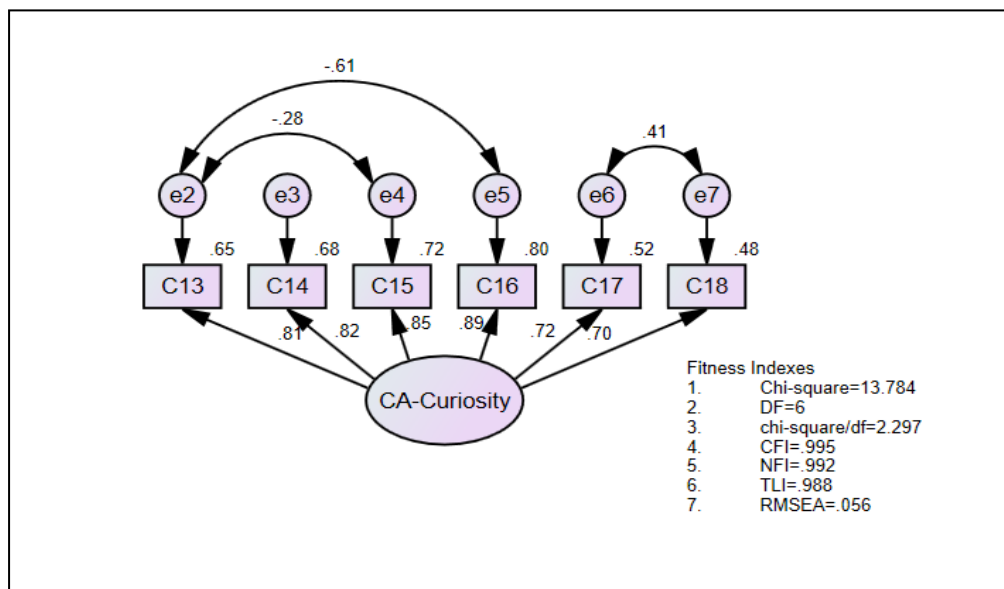


Figure 4.8: Curiosity first-order model

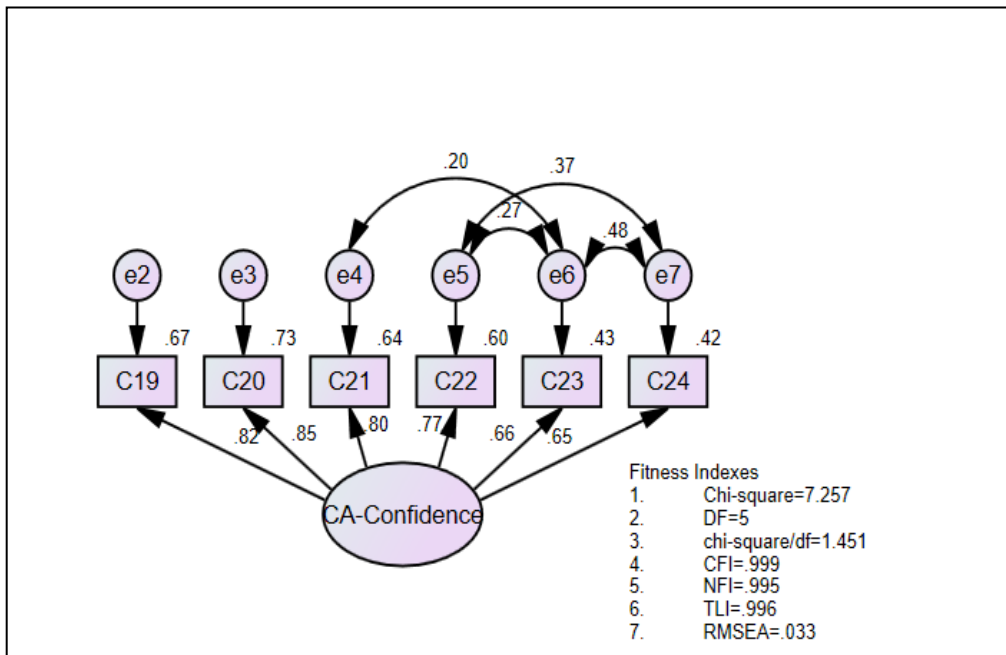


Figure 4.9: Confidence first-order model

4.4.3 Second-Order Model

The higher-order measurement model was tested to confirm the viability of Savickas's (2013) Career Construction Theory suggesting concern, control, curiosity, and confidence as the dimensions of the Career Adapt-Abilities Scale (Savickas & Porfeli, 2012).

The findings prove that the viability of the Career Adapt-Abilities construct via the convergent and discriminant validity. The second-factor model met the acceptable limits for skewness and kurtosis between ± 2.0 (Gravetter & Wallnau, 2014) and ± 7.0 (Byrne, 2010), respectively, indicating data's normal distribution (Cain et al., 2017; Yalçinkaya et al., 2018) (Table 4.9).

The results show that $\chi^2/\text{d.f} = 2.574$; CFI = 0.950; NFI = 0.921, TLI = 0.941 and RMSEA = 0.061; hence, the Career Adapt-Abilities Scale also satisfies the goodness-of-fit indices. Figure 4.10 illustrates the second-order

model of the 4-factor model. The Career Adapt-Abilities model met the cut-off values not more than 3.0 for $\chi^2/\text{d.f}$ (Kline, 2010), more than 0.80 for CFI (Forza & Filippini, 1998), NFI (Forza & Filippini, 1998), and TLI (Bentler, 1990; Hair et al., 2010), and the RMSEA recommendation by Byrne (2010), MacCallum et al. (1996) and Steiger (1998) of less than 0.08.

Evidence has it that factor loadings were between 0.808 (control) and 0.906 (confidence). The AVE was 0.767, greater than 0.50 (Hair et al., 2010; Kline, 2010). The CR (0.929) and CA (0.875) were well above 0.60 (Nunally & Bernstein, 1994; Raykov, 1998), indicating that the study variables had good convergent validity (Byrne, 2010). In addition, sufficient discriminant validity was demonstrated by all four dimensions of the 24 items under the Career Adapt-Abilities Scale with AVEs greater than r^2 and correlations between 0.704 ($r^2 = 0.496$) and 0.823 ($r^2 = 0.677$) at $p < 0.01$ (Figure 4.11 and Table 4.10).

Table 4.9: Result of assessment of normality for the second-order model –
career adapt-abilities

Variable	Min	Max	Skew	C.R.	Kurtosis	C.R.
C19	1.000	7.000	-1.116	-9.337	1.313	5.493
C20	1.000	7.000	-1.205	-10.081	1.483	6.203
C21	1.000	7.000	-1.324	-11.079	1.926	8.058
C22	1.000	7.000	-1.473	-12.322	2.514	10.517
C23	1.000	7.000	-1.300	-10.874	2.257	9.443
C24	1.000	7.000	-1.463	-12.243	2.623	10.971
C13	1.000	7.000	-.887	-7.420	.713	2.981
C14	1.000	7.000	-1.114	-9.321	1.276	5.339
C15	1.000	7.000	-.988	-8.264	.878	3.673
C16	1.000	7.000	-1.014	-8.486	1.113	4.657
C17	1.000	7.000	-1.012	-8.469	1.225	5.126
C18	1.000	7.000	-1.044	-8.738	1.318	5.514
C7	1.000	7.000	-.924	-7.730	.737	3.084
C8	1.000	7.000	-1.099	-9.196	1.292	5.405
C9	1.000	7.000	-1.308	-10.943	1.846	7.723
C10	1.000	7.000	-1.177	-9.846	1.458	6.100
C11	1.000	7.000	-1.081	-9.044	1.444	6.041
C12	1.000	7.000	-1.235	-10.336	1.801	7.533
C1	1.000	7.000	-1.251	-10.464	1.291	5.402
C2	1.000	7.000	-1.044	-8.736	.826	3.457

Variable	Min	Max	Skew	C.R.	Kurtosis	C.R.
C3	1.000	7.000	-.917	-7.675	.484	2.024
C4	1.000	7.000	-.923	-7.726	.678	2.837
C5	1.000	7.000	-1.017	-8.505	.846	3.539
C6	1.000	7.000	-1.214	-10.154	1.566	6.549
Multivariate				416.094	120.692	

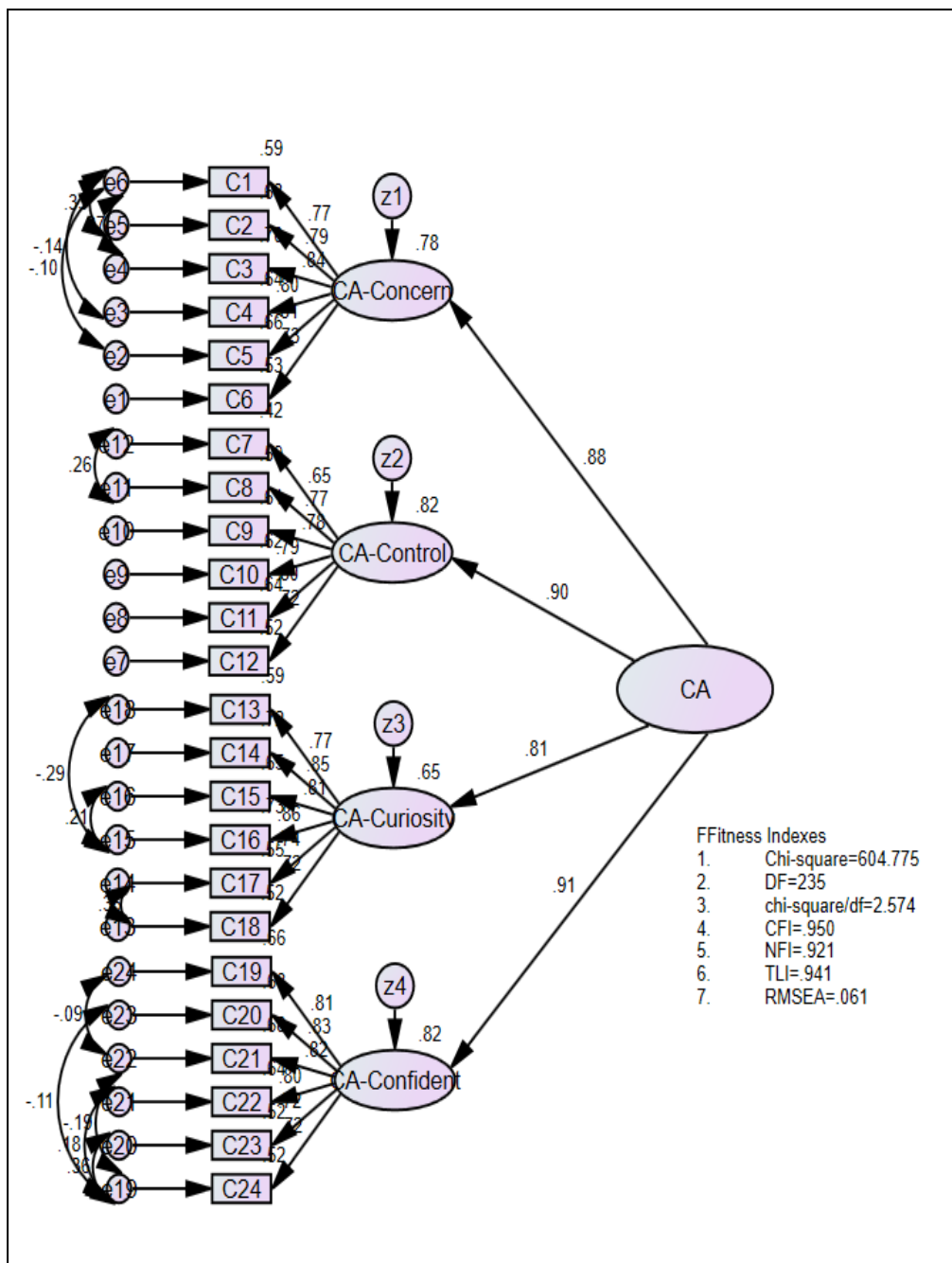


Figure 4.10: Career adapt-abilities second-order model

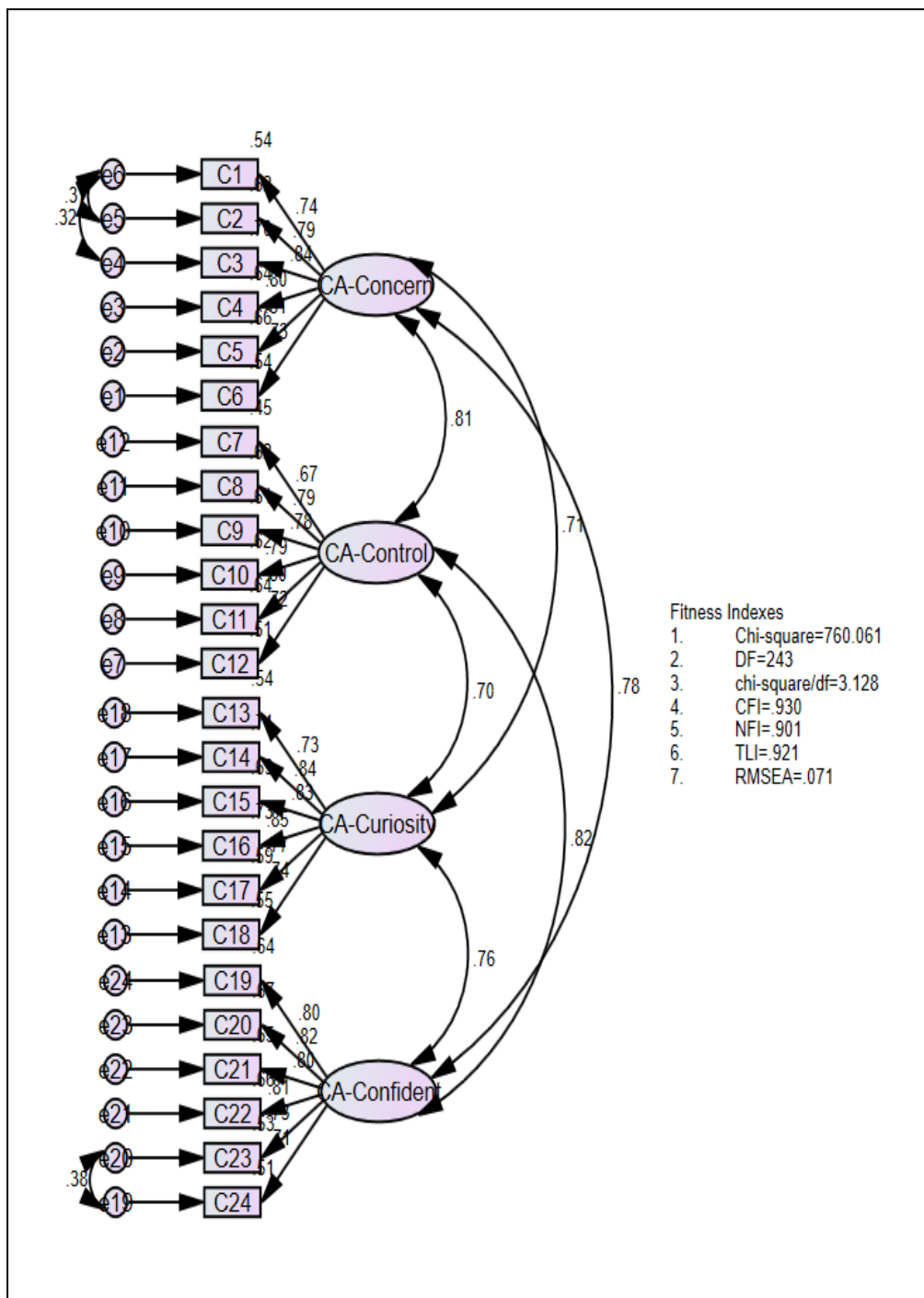


Figure 4.11: Correlation of the 4-factor model of career adapt-abilities

Table 4.10: The correlation, r^2 , the AVEs, composite reliability, and Cronbach's alpha values of the 4-factor model -career adapt-abilities

	1	2	3	4
1. Concern	1			
2. Control	0.812** (0.659)	1		
3. Curiosity	0.713** (0.508)	0.704** (0.496)	1	
4. Confidence	0.781** (0.610)	0.823** (0.677)	0.761** (0.579)	1
AVE	0.617	0.574	0.634	0.613
CA	0.785	0.756	0.795	0.782
CR	0.906	0.889	0.912	0.904

Note: ** Correlation is significant at the 0.01 level (2-tailed); r^2 are in parentheses; AVE is Average Variance Extracted; CR is Composite Reliability; CA is Cronbach's alpha

4.4.4 Structural Model

As shown in Figure 4.12 and Table 4.11, complex problem-solving ($\beta = 0.271$, $p < 0.01$), critical thinking ($\beta = 0.350$, $p < 0.01$), people management ($\beta = 0.116$, $p < 0.05$), and coordinating with others ($\beta = 0.189$, $p < 0.01$) predicted career adaptabilities significantly, except for creativity ($\beta = 0.113$, $p > 0.05$). The variance in career adaptability ($R^2 = 0.689$; 69%), concern ($R^2 = 0.751$; 75%), control ($R^2 = 0.784$; 78%), curiosity ($R^2 = 0.660$; 66%), and confidence ($R^2 = 0.837$; 84%) was predicted using the five variables of future skill sets, as listed in Table 4.12 and Table 4.13. The causal structure model was satisfactory ($\chi^2/d.f = 2.321$; CFI = 0.910; NFI = 0.853, TLI = 0.903, RMSEA = 0.056). The goodness-of-fit indices fulfilled the cut-off values of less than 3.0 for $\chi^2/d.f$ (Kline, 2010), or greater than 0.80 for CFI (Forza & Filippini, 1998), NFI (Forza & Filippini, 1998), and TLI (Bentler, 1990; Hair et al., 2010), and fulfilled the RMSEA as suggested by Byrne (2010), MacCallum et al. (1996) and Steiger (1998) of less than 0.80.

Problem-solving, critical thinking, creativity, people management, and coordinating with others, had significant correlations at $p < 0.01$, with r values between 0.339 (CPS $\leftrightarrow$ PM) and 0.743 (CPS $\leftrightarrow$ CT), as tabulated in Table 4.14. For the detection of multicollinearity, the correlation matrix for the independent variables was put to the test. The lack of high correlation coefficients of 0.85 and greater, as suggested by Cohen (1992), showed that collinearity was not highlighted as the issue (Kline, 2010). An observation of the highest correlation coefficient was made between complex problem-solving and critical thinking ($r = 0.743$, $p < 0.01$). The collinearity test was done by

checking the VIF and tolerance values for all the constructs. All VIFs were less than 5.0 (1.238–1.898) and all tolerance values were between 0.10 and 1.0 (0.527–0.808), and with this it suggests that the data was not affected by multicollinearity, as shown in Table 4.14.

Hayes and Li (2007) suggested that upon the completion of the collinearity statistics, heteroskedasticity using a Glejser test must be conducted to examine if there is a difference in the residual variance observation period as opposed to another period of observation. The heteroskedasticity test also ensures the techniques' robustness to estimate the standard errors under model misspecification (King & Roberts, 2015). The output coefficients evidenced that complex problem-solving ($p = 0.070$ to $p = 0.804$), critical thinking ($p = 0.103$ to $p = 0.954$), creativity ($p = 0.084$ to $p = 0.357$), people management ($p = 0.064$ to $p = 0.363$), and coordinating with others ($p = 0.078$ to $p = 0.693$) were found to be insignificant at $p > 0.05$, revealing that there is no heteroskedasticity problem, as shown in Table 4.15.

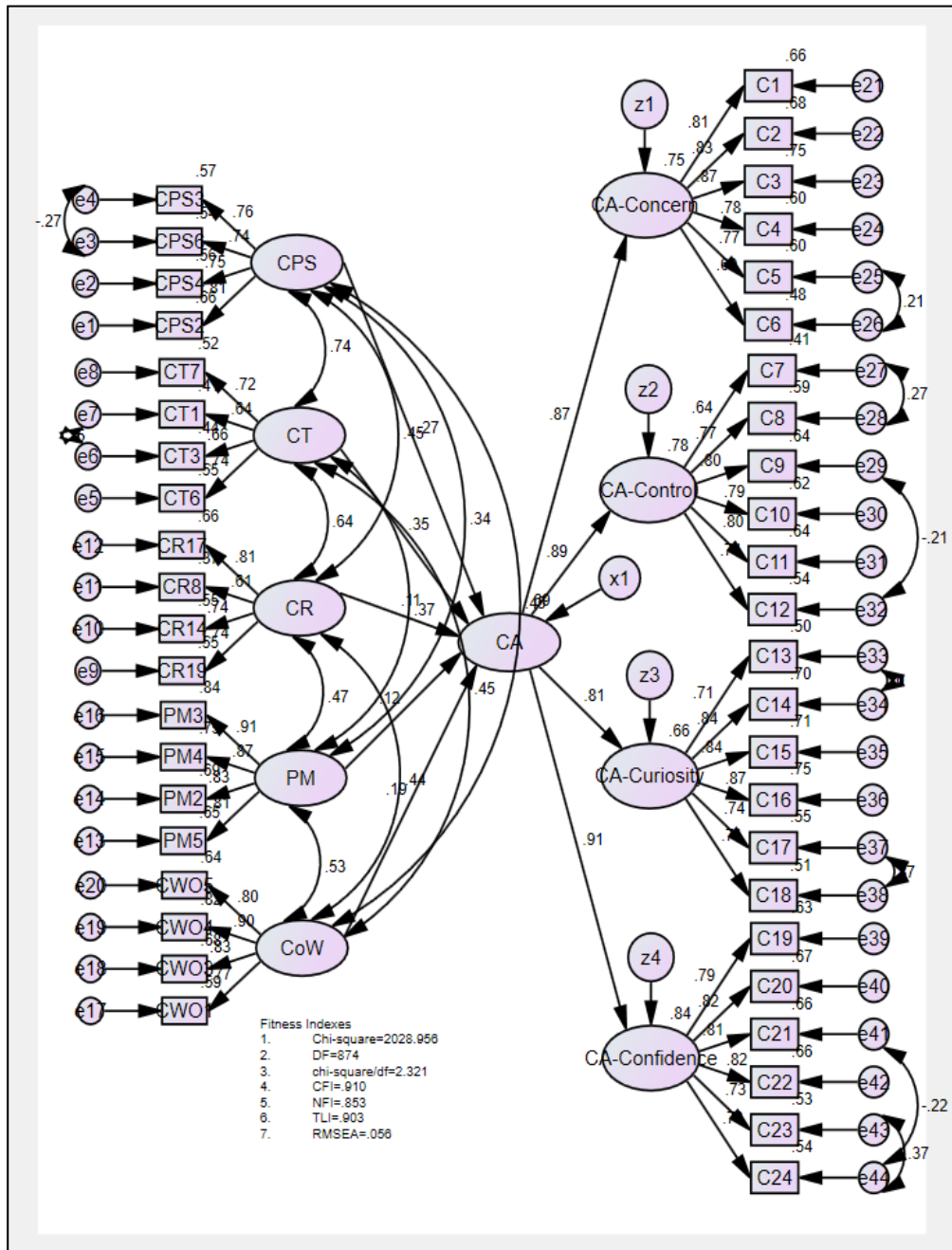


Figure 4.12: Career adapt-abilities structural model

Table 4.11: Structural path regression weights of structural model

Structural Paths			Estimate	S.E.	C.R.	P	β
CA	<---	CPS	0.263	0.068	3.851	***	0.271
CA	<---	CoW	0.174	0.045	3.890	***	0.189
CA	<---	CT	0.382	0.099	3.877	***	0.350
CA	<---	PM	0.099	0.039	2.508	.012**	0.116
CA	<---	CR	0.112	0.060	1.881	.060	0.113
CA-Concern	<---	CA	1.000				0.867
CA-Confidence	<---	CA	0.881	0.060	14.737	***	0.915
CA-Curiosity	<---	CA	0.699	0.058	12.149	***	0.812
CA-Control	<---	CA	0.731	0.062	11.855	***	0.885
CPS2	<---	CPS	1.000				0.815
CPS4	<---	CPS	0.894	0.055	16.295	***	0.748

Structural Paths			Estimate	S.E.	C.R.	P	β
CPS6	<---	CPS	0.885	0.059	15.035	***	0.736
CPS3	<---	CPS	0.933	0.058	16.051	***	0.756
CT6	<---	CT	1.000				0.739
CT3	<---	CT	0.886	0.072	12.271	***	0.665
CT1	<---	CT	0.961	0.082	11.758	***	0.639
CT7	<---	CT	0.983	0.073	13.532	***	0.719
CR19	<---	CR	1.000				0.740
CR14	<---	CR	0.923	0.067	13.884	***	0.742
CR8	<---	CR	0.727	0.064	11.277	***	0.606
CR17	<---	CR	1.044	0.069	15.183	***	0.810
PM5	<---	PM	1.000				0.806

	Structural Paths		Estimate	S.E.	C.R.	P	β
PM2	<---	PM	1.079	0.055	19.494	***	0.831
PM4	<---	PM	1.071	0.052	20.726	***	0.865
PM3	<---	PM	1.066	0.049	21.856	***	0.914
CWO1	<---	CoW	1.000				0.771
CWO3	<---	CoW	0.987	0.055	17.953	***	0.828
CWO4	<---	CoW	1.143	0.058	19.660	***	0.905
CWO5	<---	CoW	0.974	0.057	17.098	***	0.799
C1	<---	CA-Concern	1.000				0.810
C2	<---	CA-Concern	0.951	0.048	19.827	***	0.827
C3	<---	CA-Concern	0.956	0.045	21.034	***	0.866
C4	<---	CA-Concern	0.846	0.048	17.509	***	0.777

	Structural Paths		Estimate	S.E.	C.R.	P	β
C5	<---	CA-Concern	0.849	0.049	17.432	***	0.775
C6	<---	CA-Concern	0.761	0.050	15.070	***	0.691
C7	<---	CA-Control	1.000				0.641
C8	<---	CA-Control	1.155	0.075	15.411	***	0.767
C9	<---	CA-Control	1.180	0.087	13.535	***	0.799
C10	<---	CA-Control	1.142	0.085	13.437	***	0.789
C11	<---	CA-Control	1.122	0.082	13.674	***	0.798
C12	<---	CA-Control	1.094	0.086	12.686	***	0.736
C13	<---	CA-Curiosity	1.000				0.709
C14	<---	CA-Curiosity	1.175	0.065	17.970	***	0.839
C15	<---	CA-Curiosity	1.224	0.076	16.039	***	0.841

	Structural Paths		Estimate	S.E.	C.R.	P	β
C16	<---	CA-Curiosity	1.225	0.076	16.171	***	0.866
C17	<---	CA-Curiosity	1.090	0.076	14.334	***	0.743
C18	<---	CA-Curiosity	1.033	0.074	13.909	***	0.713
C19	<---	CA-Confidence	1.000				0.794
C20	<---	CA-Confidence	1.026	0.054	18.887	***	0.817
C21	<---	CA-Confidence	1.033	0.056	18.458	***	0.815
C22	<---	CA-Confidence	1.047	.057	18.521	***	0.815
C23	<---	CA-Confidence	.908	.057	15.960	***	0.731
C24	<---	CA-Confidence	.956	.060	15.874	***	0.732

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, β is regression coefficient, ***The regression coefficient is significant at the 0.01 level, **The regression coefficient is significant at the 0.05 level

Table 4.12: The variance of the structural model

	Estimate	S.E.	C.R.	P
CPS	1.085	0.112	9.656	***
CT	0.857	0.106	8.124	***
CR	1.038	0.126	8.227	***
PM	1.411	0.145	9.761	***
CoW	1.203	0.132	9.087	***
x1	0.318	0.045	7.134	***
z1	0.339	0.048	7.017	***
z2	0.150	0.027	5.602	***
z3	0.257	0.036	7.075	***
z4	0.155	0.027	5.634	***
e1	0.549	0.053	10.460	***

	Estimate	S.E.	C.R.	P
e2	0.683	0.057	11.962	***
e3	0.717	0.065	11.113	***
e4	0.707	0.065	10.889	***
e5	0.711	0.065	10.946	***
e6	0.851	0.071	12.059	***
e7	1.146	0.093	12.322	***
e8	0.774	0.068	11.370	***
e9	0.858	0.076	11.284	***
e10	0.721	0.064	11.226	***
e11	0.944	0.074	12.691	***
e12	0.594	0.064	9.305	***

	Estimate	S.E.	C.R.	P
e13	0.758	0.063	12.112	***
e14	0.738	0.062	11.830	***
e15	0.544	0.050	10.785	***
e16	0.315	0.038	8.271	***
e17	0.820	0.066	12.354	***
e18	0.539	0.048	11.155	***
e19	0.348	0.044	7.946	***
e20	0.645	0.054	11.978	***
e21	0.710	0.059	11.979	***
e22	0.568	0.048	11.779	***
e23	0.414	0.038	10.871	***

	Estimate	S.E.	C.R.	P
e24	0.639	0.051	12.591	***
e25	0.652	0.052	12.543	***
e26	0.860	0.065	13.258	***
e27	0.995	0.074	13.437	***
e28	0.650	0.052	12.488	***
e29	0.549	0.047	11.582	***
e30	0.552	0.045	12.254	***
e31	0.500	0.041	12.131	***
e32	0.706	0.057	12.435	***
e33	0.749	0.059	12.751	***
e34	0.440	0.039	11.162	***

	Estimate	S.E.	C.R.	P
e35	0.468	0.042	11.246	***
e36	0.377	0.037	10.260	***
e37	0.731	0.057	12.765	***
e38	0.782	0.060	13.006	***
e39	0.553	0.045	12.432	***
e40	0.497	0.041	11.992	***
e41	0.512	0.043	11.950	***
e42	0.524	0.043	12.108	***
e43	0.681	0.052	12.985	***
e44	0.752	0.060	12.568	***

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, ***The regression coefficient is significant at the 0.01 level

Table 4.13: Squared multiple correlations of the structural model

	R^2
CA	0.689
CA-Confidence	0.837
CA-Curiosity	0.660
CA-Control	0.784
CA-Concern	0.751
C24	0.535
C23	0.534
C22	0.665
C21	0.664
C20	0.668
C19	0.631
C18	0.508
C17	0.552
C16	0.751
C15	0.708
C14	0.704
C13	0.502
C12	0.541
C11	0.636
C10	0.622

	R^2
C9	0.638
C8	0.588
C7	0.411
C6	0.478
C5	0.600
C4	0.604
C3	0.750
C2	0.684
C1	0.657
CWO5	0.639
CWO4	0.819
CWO3	0.685
CWO1	0.595
PM3	0.836
PM4	0.749
PM2	0.690
PM5	0.650
CR17	0.656
CR8	0.367
CR14	0.551

	R^2
CR19	0.547
CT7	0.517
CT1	0.408
CT3	0.442
CT6	0.547
CPS3	0.572
CPS6	0.542
CPS4	0.559
CPS2	0.664

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, R^2 is the squared multiple correlations

Table 4.14: Covariances and correlations of the structural model

			Estimate	S.E.	C.R.	P	r
CPS	<-->	CT	0.717	0.077	9.282	***	0.743
CT	<-->	CR	0.599	0.075	8.004	***	0.635
CR	<-->	PM	0.572	0.080	7.177	***	0.473
PM	<-->	CoW	0.687	0.086	8.006	***	0.528
CPS	<-->	CR	0.477	0.071	6.716	***	0.449
CR	<-->	CoW	0.492	0.073	6.718	***	0.440
CT	<-->	PM	0.406	0.070	5.794	***	0.369
CPS	<-->	CoW	0.517	0.073	7.095	***	0.452
CPS	<-->	PM	0.419	0.073	5.720	***	0.339
CT	<-->	CoW	0.457	0.068	6.678	***	0.450
e27	<-->	e28	0.217	0.046	4.679	***	0.270

			Estimate	S.E.	C.R.	P	r
e33	<-->	e34	0.115	0.036	3.167	.002	0.200
e43	<-->	e44	0.266	0.044	6.067	***	0.372
e3	<-->	e4	-0.192	0.046	-4.190	***	-0.270
e25	<-->	e26	0.156	0.043	3.635	***	0.209
e29	<-->	e32	-0.129	0.037	-3.513	***	-0.207
e6	<-->	e7	0.249	0.061	4.075	***	0.252
e37	<-->	e38	0.281	0.045	6.184	***	0.372
e41	<-->	e44	-0.137	0.032	-4.262	***	-0.221

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, r is correlation, ***The regression coefficient is significant at the 0.01 level, **The regression coefficient is significant at the 0.05 level

Table 4.15: Tolerance and VIF values of the collinearity test for the structural model

	CPS	CT	CR	PM	COW
CPS		<i>0.765</i> (1.307)	<i>0.599</i> (1.670)	<i>0.597</i> (1.675)	<i>0.618</i> (1.617)
CT	<i>0.675</i> (1.482)		<i>0.601</i> (1.663)	<i>0.527</i> (1.898)	<i>0.529</i> (1.890)
CR	<i>0.635</i> (1.575)	<i>0.723</i> (1.384)		<i>0.667</i> (1.500)	<i>0.642</i> (1.558)
PM	<i>0.706</i> (1.417)	<i>0.706</i> (1.416)	<i>0.743</i> (1.345)		<i>0.808</i> (1.238)
COW	<i>0.696</i> (1.437)	<i>0.765</i> (1.307)	<i>0.681</i> (1.468)	<i>0.769</i> (1.301)	

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, tolerance value is in italics, VIF value is in parentheses

Table 4.16: Heteroskedasticity test for structural model

	CPS	CT	CR	PM	COW
CPS		0.110**	0.070**	0.155**	0.804**
CT	0.103**		0.718**	0.911**	0.954**
CR	0.357**	0.313**		0.084**	0.123**
PM	0.210**	0.363**	0.064**		0.092**
COW	0.550**	0.275**	0.693**	0.078**	

Note: CPS is critical problem-solving, CT is critical thinking, CR is creativity, PM is people management, COW is coordinating with others, **p > 0.05

4.5 Summary

This study used 420 Emirati undergraduate students that had undergone at least 90 credit hours in multiple university programs situated in Abu Dhabi. Different tests and approaches were used for analyzing the data in this study. In addition, the medium for the data analysis was SPSS and AMOS-SEM software.

Moreover, the data checked for normality uses the tests for normality. There was no evidence of non-response bias found, and the data had acceptable values of skewness and kurtosis, so there is the normal distribution of data. Additionally, there were no multivariate outliers discovered in this study.

The descriptive data was examined using SPSS software, while the analysis of the measurement models used SEM-AMOS. The measurement model was interpreted using the two-step EFA and CFA models. In sum, the measurement models showed that all constructs had satisfactory convergent and discriminant validity for the formative measurement. It was also proven that the studied variables had no case of multicollinearity.

The hypotheses proposed in this study were tested with the help of both SPSS and SEM-AMOS. The final structural model had sufficient goodness-of-fit, and the only significant factors affecting career adaptability were found to be complex problem-solving, critical thinking, people management, and coordinating with others. The finding also revealed that all four significant variables were a strong contribution to the career adaptability dimension of confidence. The correlation of all five future skill set variables did not shed light on any issues of collinearity.

This study further sheds light on the proof that Emirati undergraduates

had seen that their career adaptability in future employment greatly relies on critical thinking, complex problem-solving, coordinating with others, and people management. They did not think that creativity is an important future employability skill for career adaptability. It is quite fascinating that these four significant future employability skill sets were found to most strongly contribute to confidence unlike other career adaptability dimensions. Table 4.17 presents a summary of the results of the hypotheses.

Table 4.17: Summary of the hypotheses results

Hypotheses	p	Remarks
<i>H1</i> : Complex problem-solving skill significantly impacts career adaptability and its sub-dimensions; (i) concern, (ii) control, (iii) curiosity, and (iv) confidence	$p < 0.01$	Accepted
<i>H2</i> : Critical thinking skill significantly affects career adaptability its sub-dimensions; (i) concern, (ii) control, (iii) curiosity, and (iv) confidence	$p < 0.01$	Accepted
<i>H3</i> : Creative skill significantly influences career adaptability and its sub-dimensions; (i) concern, (ii) control, (iii) curiosity, and (iv) confidence	$p > 0.05$	Rejected
<i>H4</i> : People management skill significantly affects career adaptability and its sub-	$p < 0.05$	Accepted

dimensions; (i) concern, (ii) control, (iii) curiosity, and (iv) confidence		
<i>H5</i> : ‘Coordinating with others’ skill significantly impacts career adaptability and its sub-dimensions; (i) concern, (ii) control, (iii) curiosity, and (iv) confidence	$p < 0.01$	Accepted

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Chapter Overview

In this chapter, we come to the findings of the study and the answers and discussions of the research questions under the light of theoretical and practical contributions. The limitations of the study and recommendations for future work shall be in the final part of this chapter.

5.2 Research Findings Discussion

This section discusses the results given in Chapter 4. To reiterate, the objective of this study was to study the impact of 21st century employability skill sets on the UAE undergraduates' career adaptability and future employability. Against this background, this study established five main hypotheses.

To date, the majority of research have investigated employability from the eyes of various relevant parties- employers, graduates, to higher education institutions (Belwal, Priyadarshi, & Al Fazari, 2017). However, there is a

paucity of studies that examined the students' perceptions of their ability to fit into their future career (Raty, Komulainen, Harvorsén, Nieminen, & Korhonen, 2018). Moreover, scholarly work on the students' perceptions of future employability skill sets to ensure that they can adapt to the changes or the demands in their career has almost been non-existent (Ebenehi et al., 2016; McKenna et al., 2016; Samans & Zahidi, 2017). Furthermore, Jackson (2016) observed that existing skills-based research has a scope that is too limited that the complex issue of graduate work readiness is not captured entirely.

Thus, the scarcity of the literature on the graduates' self-perceived career adaptability and employability spurs the researcher to conduct this study. This study hopes to address the gap in the current literature by looking into the perceptions of university students about their future skill sets and the extent of their ability in adjusting themselves to future employment. This finding is important because graduates could no longer get a job using only their qualifications; now, they must also have skills that would be indicative of their resilience and adaptability in their future careers.

5.2.1 Research Objective 1: Identify 21st Century Employability Skill Sets

This study found that the skills and attributes that employers want the most are the very skills that can guarantee the employability of the Emirati undergraduate students. Teamwork and communication skills are the most important employability skills (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Andrews & Russel, 2012; Asonitou, 2015; Ito, 2014; Jackson, 2014a), but future employers

do not deny the fact that they also need a more unique and robust set of skills relevant to future jobs.

Recent studies have also looked at the generic skill sets - it is stated that employers require these from the new graduates to ensure the latter's employability. The generic skill sets include communication, teamwork, problem-solving, and technology savvy (Andrews & Russel, 2012; Ito, 2014; Jackson, 2014b). Another study in the UAE named communication skills in Arabic and English, being a team player, able to work under pressure, able to deal with new challenges, and leadership skills were the most pursued skills in the UAE (Bayt.com, 2017). Next, senior Emirati undergraduate students rated 21st century employability skill sets according to the following order of importance: (1) coordinating with others, (2) complex problem-solving, (3) critical thinking, (4) people management, and (5) creativity. Echoing the finding of an earlier study, occupations and specialties that are most in demand today did not exist several years ago, so these future skill sets are expected to have a significant impact on the future job market (Burger et al., 2019; Gomes, 2014; Gregorio et al., 2019; Holloway et al., 2019; Samans & Zahidi, 2017; Welch & Ureta, 2015). The 21st century skill sets, to add, do tend to overlap but all are significantly important for employability and for an employee to survive in the technology-driven economy booming today (Burrus et al., 2013; Jiang et al., 2019; Kyllonen, 2012; Minocha et al., 2018).

Standing out as a prominent global trade and logistics hub, as well as thriving as one of the most advanced and sophisticated regional economies, the UAE has an excellent global connection. the Fourth Industrial Revolution has

created massive changes to the UAE's labor market, especially evident in the latest technological trends. Therefore, the UAE has now paid attention to a knowledge economy. Unlike employers in the past who were looking for technical skills, future jobs will hunt for flexible and self-motivated individuals to adapt well to the volatility of business environments. Fast-growing and innovative employers are rapidly utilizing and adapting technologies that require skills that are more extraordinary. Hence, Emirati undergraduate students need to prepare technical skills and apply them, not only be taught these skills at the university level. It is a fact that basic university-level skills will not be sufficient for the job market of the future, as it will also necessitate the usability and understanding of information organizations.

The new working world is actually hungry for 'stronger' skills as listed in the World Economic Forum (2016) report. The report examined fifteen of the global economies' top strategy executives and Chief Human Resources Officers following nine broad industry categories. They found that the world's business leaders ranked complex problem-solving skills as the most important skill, also critical thinking skills, creative skills, people management skills, and the ability to coordinate with others.

A survey and interview conducted by British Council UAE on the future job skills in the UAE found that business leaders focus on different skills relevant to a growing hub economy. As opposed to the survey findings by the World Economic Forum (2016) listed above, the UAE's business leaders had placed creativity as a priority in their must-have skill list (48%), next to people management skills (35%), the ability to coordinate with others (32%), critical

thinking skills (31%), and complex problem-solving skills (29%).

However, there has been a clash of opinion when it comes to expectations of skills for future jobs, between the labor market and the UAE youth or undergraduates. The Emirati undergraduate students had this confidence that they have the skill sets required to get jobs. Different from the employers, Emirati undergraduate students placed themselves at higher band of skill sets with the ability to coordinate with others being at the top of the list (79%), followed by complex problem-solving skills (78%), critical thinking skills (76%), people management skills (74%), and creativity (72%).

Figure 5.1 illustrates these differences between UAE business leaders and Emirati undergraduate students.

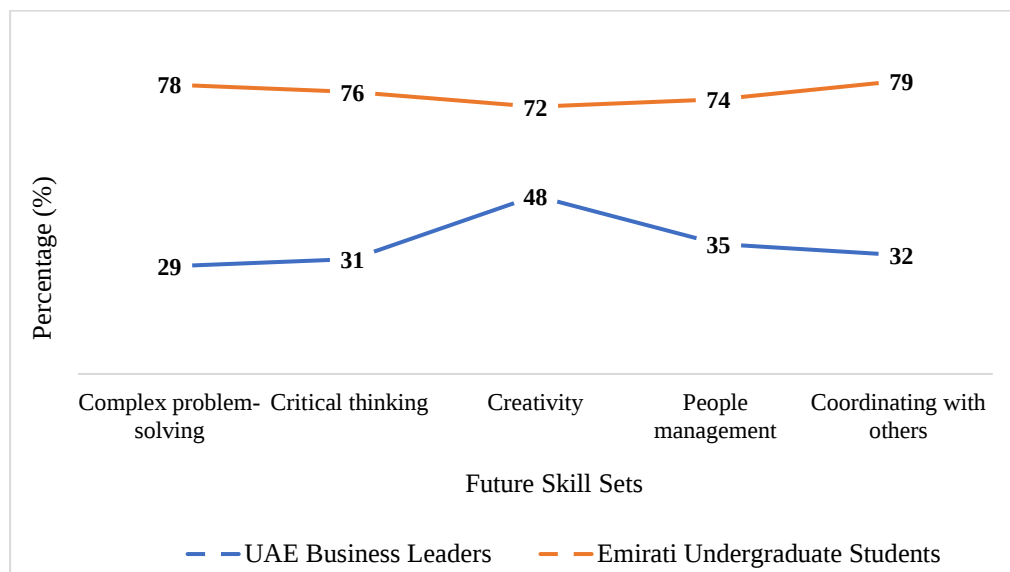


Figure 5.1: The differences in perception of the future skills between UAE business leaders and Emirati undergraduate students, based on priority

In terms of career preparation, the study result above echoes the findings of the Association of American Colleges and Universities' (Hart Research Associates, 2018) survey conducted on employers and college students. In the survey, while the students felt that they had a good level of preparation to a certain degree, the employers had felt otherwise. In the United States, a great number of employers perceived that college graduates were not ready to embark upon the real vocational world, as the latter is seen to show a lack of knowledge and skills application. Only few, out of every ten employers had faith in the college graduates and only 18% felt that graduates had the ability or skills to coordinate with others, followed by complex problem-solving (24%) creativity (25%), critical thinking (26%), and people management (37%). The students generally had a more inflated perception of themselves somehow, with more confidence that they were ready to become part of the workforce. In specific, 55% felt they could coordinate well with others, 59% felt they had good complex problem-solving skills, 57% thought they had good creativity, 66% thought they had good critical thinking skills, and 64% believed that they were blessed with good people management skills.

Similarly, an investigation was carried out on university students in Finland and it is found that the university students were very optimistic about their own employability. They had a good perception of, and confidence in, their ability to be hired after graduation. Raty et al. (2018) stated that the differing normative power of the context of appraisal may be a good explanation for this confidence. For example, they see student life as less challenging than

working life, and that the working experience could vary in a lot of ways than the former.

There are also similar findings established from an international survey conducted on participants from many geographical and socioeconomic backgrounds (i.e., Morocco, Germany, Turkey, the United Kingdom, Mexico, India, Saudi Arabia, the United States, and Brazil). The employers in these countries generally believed that new graduates were not prepared to enter the workforce. Contrarily, another study found that 70 percent of educators agreed that undergraduates were ready to compete in the labor market, whereas 75 percent of graduates claimed that they were ready for the challenges at work (Mourshed, Farrell, & Barton, 2013).

Some argue that the millennial generation (Lee, 2014) and generation Z graduates (Buzzetto-Hollywood & Alade, 2018) are characterized by their overconfidence and boldness in what they are able to do. For example, their rating of themselves is substantially higher than that of the industry employers. They might have forgotten or overlooked the fact that the employment structure is experiencing rapid change due to today's age of interconnected technology and economies. Therefore, the gap separating future skill sets demanded and existing skill sets will be expected to be greater. A solution might appear striking, which is to develop future skill sets. In other words, to narrow this gap, future employees should anticipate and respond to the changing skills needed and supplied by the stakeholders.

It is also something to think about that the arrival of new technologies could have made some workers' skills irrelevant or available future skill sets be

under-used (Frey & Osborne, 2017). Moreover, it is mind-boggling for employers to assess the actual skills of the job applicants when they have limited or no work experience (Minocha et al., 2018). Hence, the stakeholders indirectly involved in the labor market need to participate actively in removing the employment barriers by making the efforts to foster access to quality jobs that match the future skill set and afford greater flexibility to cater for the labor market conditions that are consistently changing.

5.2.2 Research Objective 2: Measure the Impact Of 21st Century Employability Skill Set on the Career Adaptability and Future Employability of Undergraduates

The results of this study further establish that future skill sets left a significant impact on career adaptability (career adaptability: $R^2 = 69\%$, concern: $R^2 = 75\%$, control: $R^2 = 78\%$, curiosity: $R^2 = 66\%$, and confidence: $R^2 = 84\%$) and consequently enhancing graduates' future employability. The results are consistent with the Career Construction Theory where these future skill sets could be used as a direction for transactional competence and as a psychosocial resource for undergraduates so that they can learn how to effectively handle challenges and changes related to their career later (Zacher, 2016). This theory completes the Employability Theory by predicting the type of vocational behavior that will affect undergraduates' future employability. It also helps one to fathom how the undergraduates will deal with their future career in which high-demanding employers and a robust economy make the main characteristics (Savickas, 2013).

Today, employers have become increasingly concerned with the direction of undergraduates' future employability where they must equip themselves with the skill sets that could ensure their survival in the fast-paced employment landscape (Kadir & Deniz, 2016; Fugate et al., 2004). These claims are in tandem with the World Economic Forum (2016), which reported that, by 2020, the core skill sets required by most occupations will change as a result of a new environment that has disrupted the current and emerging jobs across industries.

Undergraduates will not be hired easily if they are unable to adopt essential competencies to confront the changes in the job market. It can be said that up to a certain extent, a lot of undergraduates are ignorant of the skills that they need to have to woo their potential employers, so they lack the preparation and adaptability. They simply expect that they can get a good job just after graduating, and therefore they do not prepare much before they enter a real workplace setting, which, due to the fourth industrial revolution, should have more profound effects (Younus, 2017) that will radically change employment in the next five years (Shank, 2016). In brief, these factors are seen to contribute to less definable future job prospects for these fresh job-hunters (Savickas et al., 2009).

The findings of this study established further that complex problem-solving, coordinating with others, critical thinking, creativity, and people management have a positive significant correlation at $p < 0.001$ carrying a value between 0.339 (CPS <--> PM) and 0.743 (CPS <--> CT). As suggested by

Burrus et al. (2013) and Kyllonen (2012), these results support the finding that 21st century skill sets indeed overlap with each other.

5.2.2.1 Hypothesis 1: Complex problem-solving skill sets significantly impact career adaptability

The evidence in this study proposes that complex problem-solving impacts career adaptability significantly ($\beta = 0.271$, $p < 0.001$; career adaptability: $R^2 = 69\%$, concern: $R^2 = 75\%$, control: $R^2 = 78\%$, curiosity: $R^2 = 66\%$, and confidence: $R^2 = 84\%$). This tallies with the studies conducted previously suggesting that complex problem-solving skills gained during the study period give the greatest effects on career adaptability (Mellors-Bourne et al., 2015; International Labor Office, 2010; Vockley & Vockley, 2008). This study will, therefore, help senior Emirati undergraduate students become more pro-active when they prepare for their future employability by developing the ability to solve complex problems (Greiff & Fischer, 2013). They must also concentrate on being adaptable to changes in the workplace and work setting to meet the future labor market demand (Dorner & Wearing, 1995). According to Savickas (1997), it is important for undergraduates to be able to solve complex problems, as he or she will can plan, explore, and make decisions about his or her future better.

The finding is consistent with earlier studies that found that complex problem-solving skills and career adaptability were important predictors to the ability of a person to be employed quickly (Coetzee & Harry, 2014; Nota et al., 2014). In contrast, recent studies on this subject have been attempting to stress

on particularly generic skill sets that employers require of new graduates to ensure that they are employable (Al-Alawneh, 2014; Al-Mutairi et al., 2014; Belwal et al., 2017). This study shows that the connection between complex problem-solving skill sets and career adaptability highlights the importance of undergraduate students having other than just generic skills to ensure their adaptability in their careers. Other researchers also highlighted that complex problem-solving skills can lead to a lot of advantages- positive career-related challenges (Coetzee & Beukes, 2010), effective career decision-making, and adaptive functioning (Savickas & Porfeli, 2012). Furthermore, students participating in experiential career development activities have a better chance at improving their complex problem-solving and adaptation skills. During these activities, students will be able to identify their strengths and weaknesses, opportunities and threats, and assess their current skill level and compare it with the employability skills sought by employers.

This study shows whether or not the university produces graduates who cater to the current labor market demand, also who have the potential to improve business practices, and, in turn, benefit the society. The results of this study show that cognitive ability can be described by underlying competence or mental representation leaning on the finding that complex problem-solving was significantly positively connected to critical thinking ($r = 0.743$; $p < 0.001$), people management ($r = 0.339$; $p < 0.001$), coordinating with others ($r = 0.440$; $p < 0.001$), and creativity ($r = 0.449$; $p < 0.001$). These relevant skill sets are found to be very important when dealing with life in this increasingly complex world. As today's workforce has transformed the way of life and the way work

is being done (Grey, 2016; Saavedra, & Opfer, 2012; Vanpatten, & Benati, 2010), it is substantial for graduates to adopt these skills with their existing skill set so they can be more employable in the future. In this study, the VIF values were between 4 and 10 (Cohen, Cohen, West, & Aiken, 2003) and for tolerance values, higher than 0.1 (O'Brien, 2007), well within the recommendation for a multicollinearity test. Therefore, the study result was not impacted by social desirability bias. This study gives an indication how senior Emirati undergraduate students perceive and view their present ability. The results makes further explanation that the undergraduates should have the abilities and capabilities that make them adaptable to future changes to ensure that they can experience a positive transition to future jobs and for their employability to sustain.

5.2.2.2 Hypothesis 2: Critical thinking skill sets significantly affect career adaptability

The participants of this research study demonstrated that the self-perceived level of critical thinking has a positive and significant causality with career adaptability that is important for UAE's future employment ($\beta = 0.350$, $p < 0.01$; career adaptability: $R^2 = 69\%$, concern: $R^2 = 75\%$, control: $R^2 = 78\%$, curiosity: $R^2 = 66\%$, and confidence: $R^2 = 84\%$). The findings show that senior Emirati undergraduate students perceived critical thinking as a highly valuable skill to have to ensure one's adaptability to future employability. It is also found that students felt it was crucial to showcase the skill sets required to the employers.

Recent studies have also indicated that critical thinking is one of the

most sought-after skill sets by employers (Jackson, 2015; Sarkar et al., 2016; Thomas & Day, 2014). These works focus on the important role of critical thinking skill sets for knowledge development and active engagement in the job to ensure career success. This research finding further points out that undergraduate students have begun to realise the importance of demonstrating their critical thinking capacity and realize that it one of the most desired skill sets.

The students also admitted their demonstration of critical thinking strongly influences their confidence and control, and this further enables them to achieve career adaptability. Consistent with Frost and Willingford (2013), critical thinking is very often used to address many workplace issues. Furthermore, evidently an individual's decision-making abilities are derived from thought-provoking assumptions, imagination, exploration of alternatives, and demonstration of reasoning that can facilitate decision making and interpretation of information (Jackson, 2015; Sarkar et al., 2016), which drive the individual to use critical thinking skill set so they can adapt themselves at the workplace and achieve career sustainability (Beer et al., 2016). Brown (2015), Guo et al. (2014), Uy et al. (2015), and Wehrle, Kira, and Klehe (2019) also shed light on the fact that the ability to demonstrate critical thinking skills will be a push for the undergraduates to enter the labor market and achieve more success in the aspect of career adaptability.

This study indicates whether or not universities produce graduates who can meet the demand of the current labor market. It also points to the ability of the undergraduates to think in a work-related context critically, solve work-

based problems, and make very good decisions at work. This study also asserts that the underlying competence or mental representation describing cognitive ability are embedded and intersect with higher-order thinking skills; this is based on the findings that critical thinking positively and significantly correlated with complex problem solving ($r = 0.743$; $p < 0.001$), creativity ($r = 0.635$; $p < 0.001$), people management ($r = 0.369$; $p < 0.001$), and coordinating with others ($r = 0.450$; $p < 0.001$). Tsui (2002) raised a point that graduates must have higher order thinking skills as part of their employability skill set and to be adaptive to the future workplace changes and challenges.

To ensure social desirability bias does not leave any impact on the critical thinking skill on career adaptability, a multicollinearity test was performed. The test found that this study was not affected by social desirability bias as the VIF values had fallen within the range between 4 and 10 (Cohen et al., 2003), and higher than 0.1 for tolerance values (O'Brien, 2007). Thus, this study reveals that senior Emirati undergraduate students perceived and viewed critical thinking skills as pivotal to career adaptability. There is another explanation that the undergraduates' capability to demonstrate critical thinking skills causally and significantly govern their career adaptability.

5.2.2.3 Hypothesis 3: Creative skill sets are not significantly related to career adaptability

Even though there has been ample evidence suggesting that creative skill sets are an important skill for career adaptability (Coetzee & Schreuder, 2018; Ebenehi et al., 2016; Frey & Osbourne, 2017; Hurst et al., 2018; Seibert et al.,

2016), this study has proven the opposite. The senior Emirati undergraduate students in this research believed that creative skill sets did not influence career adaptability in a significant way ($\beta = 0.113$, $p > 0.05$). These results are in line the Middle East Job Index Survey 2017 reporting that the most demanded skill sets in the UAE job market are being a team player as well as having the ability to work under pressure, good communication skills in Arabic and English, the ability to take on new challenges, and leadership skills (Bayt.com, 2017), but amazingly, there is no mention of creativity. In addition, earlier studies concur that the most sought-after skill sets by employers for entry-level jobs are the generic soft-skills related to business namely professionalism, effective communication, and teamwork were (Gregorio et al., 2019; Yusof et al., 2012). These studies manage to show that creativity was not a demanded skill identified by employers.

It is fascinating that although this study showed that there was no significant relationship between creativity and career adaptability, the components of career adaptability were found to correlate with creativity positively and significantly (creativity $\leftrightarrow$ concern: $\beta = 0.538$, $p < 0.05$; creativity $\leftrightarrow$ control: $\beta = 0.497$, $p < 0.05$; creativity $\leftrightarrow$ curiosity: $\beta = 0.554$, $p < 0.05$; creativity $\leftrightarrow$ confidence: $\beta = 0.552$, $p < 0.05$). To add, this study also pointed out that the correlation was not affected by multicollinearity as the multicollinearity test conducted established VIF values in the range between 4 and 10 (Cohen et al., 2003), and tolerance values more than 0.1 (O'Brien, 2007). The importance of the multicollinearity test result is highlighted because there is an added benefit of not changing the interpretation of the coefficient, and thus

it gives a rigorous test. This test also posits that the social desirability bias did not impact the insignificant relationship formed between creativity and career adaptability.

There has been a contradiction with earlier research where analytical and problem-solving skills and independent thinking capabilities were the foundation of creative skill sets required at the workplace (Hameed, Khan, Shahab, Hameed, & Qadeer, 2016). For example, Al-Mutairi et al. (2014) and Nilsson (2010) proved that from zeroing in on the problem, breaking it down, prioritizing it, and adapting to changing situations, creativity can be developed and yielded. Moreover, another study stated that concern, control, curiosity, and confidence can be demonstrated at the workplace (McMurray et al., 2016), so creativity is actually the part and parcel of sustaining future employment.

This finding also suggests that as the senior Emirati students perceived that they had developed university-level creativity, their creativity would be very much affected by the workplace leadership they will encounter in the future. In effect, supervision styles and job complexity in the future workplace could build up some creativity barriers on graduates' adaptability (Mostafa & El-Masry, 2008), a fact that is particularly true in the Arab context. Studies in Jordan (Makhamerah & Al-Dahhan, 1988), Saudi Arabia (Al-Beraidi & Rickards, 2003) and Egypt (Mostafa, 2005) established that the attitude of the manager also plays a part where it impacts the way in which employees interact and exchange ideas; to put simply, promoting creativity.

However, there is evidence to validate that culture may affect graduates' creative skill set when it comes to their career adaptability at the workplace.

Research is in consensus that the socio-cultural system is the very aspect that creates the creative mental process (Rudowicz, 2003). Thus, this skill does not exist in isolation. A creative person must also naturally be curious and is a willing risk-taker (Amabile, 1996). Most Westerners are comfortable as they take risks and are generally very curious, but this does not apply to Arabs. In fact, Arabs tend to favor ideas that have already been proven. To save face and prevent ostracization, Arabs would go for more structured and team-friendly approaches. Similarly, another study asserted that in the Arab World's traditionalist culture, certain traits are upheld more than others to keep the status quo, for example, Arabs have this tendency to avoid any negative judgements instead of questioning matters consciously; they feel shame instead of guilt; conformity not creativity; and fatalism cushioned by conventional religious thoughts (Barakat, 1993; Elbanna, Kapoutsis, & Mellahi, 2017; Kirby, 2018; Sami & Karayanni, 1983).

Hence, the correlation result in this study (creativity $\leftrightarrow$ concern: $\beta = 0.538$, $p < 0.05$; creativity $\leftrightarrow$ control: $\beta = 0.497$, $p < 0.05$; creativity $\leftrightarrow$ curiosity: $\beta = 0.554$, $p < 0.05$; creativity $\leftrightarrow$ confidence: $\beta = 0.552$, $p < 0.05$) lends strong support that senior Emirati undergraduate students believe creativity to be an important skill set that will help them to survive in the daunting environment of the future labor market. That said, the regression result ($\beta = 0.113$, $p > 0.05$) shows that the senior Emirati undergraduate students felt the UAE education system, especially universities, still had a long way to go in implementing courses that teach creativity among students. This is consistent with the findings of El-Sokari, Van Horne, Huang, & Al Awad, (2013), who

observed that despite good initiatives implemented all round, the UAE has not thought about promoting entrepreneurship as part of its education system. The study lays an emphasis on problem-solving, critical thinking, and creativity as the fundamentals of entrepreneurship.

5.2.2.4 Hypothesis 4: People management skill sets significantly impact career adaptability

This study strongly supports the fact that the people management skill set affects the senior Emirati university undergraduates' career adaptability ($\beta = 0.116$, $p < 0.05$; career adaptability: $R^2 = 69\%$, concern: $R^2 = 75\%$, control: $R^2 = 78\%$, curiosity: $R^2 = 66\%$, and confidence: $R^2 = 84\%$). There is also the affirmation in regard of the main contribution of people management towards the confidence and control dimensions of career adaptability. This result explains students' ability in giving and receiving feedback, addressing, and supporting relationships, dealing with tricky circumstances, and allowing for changes when solving work-oriented problems. Added to this is that participative decision-making, autonomy, seeking information, and encouragement also illustrate the common goal of the interaction between people that meets career adaptability dimensions.

In the same way, previous works also account for the people management skill sets in assessing adaptability behavior for employability (Chong & Leong, 2017; Coetzee & Schreuder, 2018; Ito & Brotheridge, 2005; Karaevli & Tim, 2006; Spurk et al., 2016). We do not have much empirical evidence that links people management skill sets with career adaptability in the

UAE. In the light of this study, however, it provides evidence that the people management skill sets of undergraduate students are inter-related and have a positive relation to career adaptability.

This study reveals that senior Emirati undergraduate students relate their ability to demonstrate people management skill sets with several other abilities-being enthusiastic to give and accept feedback, address and support relationships, deal with difficult situations, and authorize transformation. Similarly, it has been established in some previous works that undergraduates were aware of the impact of career attributes (career purpose, self-esteem, self/other skills, behavioral adaptability, career directedness, and social connectivity) on career adaptability resources (career confidence, career control, career concern, and career curiosity) (Chong & Leong, 2017; Coetzee & Schreuder, 2017). These skills, thus, give a push that the graduates need to adjust themselves to the changing labor market (Jackson & Wilton, 2016; Tomlinson, Baird, Berg, & Cooper, 2018).

Ito and Brotheridge (2005) further suggested that participative decision-making, autonomy, information, advice, and encouragement were the primary elements of the people management skill set and again, this is harmonious with our current study. The results show that people management was positively and significantly correlated with complex problem solving ($r = 0.339$; $p < 0.001$), creativity ($r = 0.473$; $p < 0.001$), critical thinking ($r = 0.369$; $p < 0.001$) and coordinating with others ($r = 0.528$; $p < 0.001$). To add, the elements of people management are interconnected in the human's cognitive processing far from the basic observation of facts and memorization. Tomlinson et al. (2018) raised

their view that the formal and informal experiences of the undergraduates will formulate their people management skill sets, which in turn provides a link to their behavioral adaptability and career directedness.

Little of this study was affected by social desirability bias because the multicollinearity test established VIF values between 4 and 10 (Cohen et al., 2003), and tolerance values higher than 0.1 (O'Brien, 2007). Hence, this study strongly advocates people management as an important 21st century skill set. The students believed that the importance and significance of people management towards career adaptability would give them more secure jobs.

5.2.2.5 Hypothesis 5: The skill to coordinate with others significantly impacts career adaptability

The Emirati seniors also perceived career adaptability to be impacted significantly by their current and expected ability to coordinate with others ($\beta = 0.189$, $p < 0.05$; career adaptability: $R^2 = 69\%$, concern: $R^2 = 75\%$, control: $R^2 = 78\%$, curiosity: $R^2 = 66\%$, and confidence: $R^2 = 84\%$). The students were aware of the importance of understanding complex human activity in each situation, embarking upon efficient relationships, analyzing different elements of complex human activity, assessing the context of human interactions, and creating a harmonious relationship by coordinating with others. Next, they are also expected to have good competencies in using information technology as one aspect of teamwork at the workplace (Benson & Morgan, 2016).

The participants of this research believed that coordinating with others is another important skill set for career adaptability, and this echoes the previous

studies such as Zaharim et al. (2009), Chong and Leong (2017), Coetzee and Schreuder (2016), Coetzee and Schreuder (2018), Guan et al. (2016b), Spurk et al. (2016) and Su and Zhang (2015). These rings true if university students experienced empowerment by requesting for input, sharing information, and decision-making and delegating work during study. Meta-Analytical research that examined the results of 105 studies from 30 countries found that empowerment was key aspect in Eastern cultures in influencing employee creativity skills, and it gave a more positive impact on employees with little experience (Lee, Willis, & Tian, 2018).

Latest evidence suggests that senior Emirati undergraduate students begin to consider coordinating with others as an expected and demanded skill set in a lot of industries. Referring to previous works, stakeholders see effective teamwork and communication with others as crucial skill sets that lead to employability (Griffiths et al., 2018; Jackson, 2016; McMurray et al., 2016; Moore & Morton, 2017).

This study also demonstrated that the result was not governed by social desirability bias. The multicollinearity test revealed VIF values between 4 and 10 and higher than 0.1 tolerance values, so the threshold values given by Cohen et al. (2003), and O'Brien (2007), respectively, had been fulfilled. Just like McKenna et al. (2016), Maggiori et al. (2017), Olugbade (2016) and Spurk et al. (2016), this study also advocates the ability to coordinate with others among the senior Emirati undergraduate students along with their existing social skill sets created based on the human socio-cultural identity and psychosocial factors anticipated as crucial components of the graduates' career adaptability toolkit.

Hence, the results of this study agree that coordinating with others is an important 21st century skill set. Students realize the importance and significance of coordinating with others when it comes to their career adaptability. They believe that this relationship serves as a foundation for a successful management of their future work demands as well as an effective dealing with career-related changes and challenges.

5.3 Contributions to Theory

There are at least five significant ways of contribution made by the study. First, this study examines the effects of the Fourth Industrial Revolution in bringing about changes to the necessary employability skill sets. The P21 framework suggests a model functioning to attempt at incorporating 21st century skills into the education system. The framework establishes creativity, complex problem solving, coordinating with others, people management, and critical thinking, as the skills that students need to excel in many aspects of their lives. This increased identification is to prepare graduates for the complex life and work environment of the 21st century, where they must be innovative and willing to learn even after they finish studying in the university. With the Fourth Industrial Revolution bringing change to work groups and work descriptions due to the technology and media domination, graduates must also be smart enough in accessing and utilizing the wealth of information that exists. They must also be able to be quick-thinking when dealing with technological changes, play it smart as a team member, and contribute effectively, as their way to make it in the 21st century. Robots and artificial intelligence (AI) are currently very popular as

substitute for humans, therefore forcing graduates to foster skills that only humans can master. To address this issue, graduates must marry the learning of academic subjects with 21st century interdisciplinary themes, emphasizing a profound understanding of knowledge content, engaging with real-time data, also settling meaningful problems guided by academic experts from an on-the-job perspective, and in turn mastering social and emotional competencies, thinking skills, and content knowledge to ensure that they can deal with the future.

Next, this study investigated the Career Construction Theory, consistent with Savickas et al. (2009), who stated that a core component of career adaptability justifies the occupational choice and work adjustment as the environmental adaptation and integration into the community. The study regarded occupation as a tool to integrate oneself into the fabric of society and build up a successful career, but the components to creating a future ready, globally competitive workforce and equipped with the skill sets of the future were not mentioned. Therefore, this study suggests we can lean on the Career Construction Theory as a new means for making aesthetic value judgment, but it depends on the intention that drives the graduate's commitment to express knowledge, skills, and attitudes at different turning points of his or her career. In effect, one of the biggest challenges is to equip graduates with the educational foundation and skill sets necessary to prosper in the future. Digesting the process carefully, graduates undergo various life stages in which their readiness in penetrating into the workforce will vary, so the competencies, attitudes, and beliefs that should be fostered among them must cater to all these varying

changes, so that career sustainability can be realized. In other words, the social context and personal needs of the graduates will be able to help them make use of the career interventions.

Thirdly, the findings of this research are of value to the Competence Theory domain, as they can be linked with the Career Construction Theory to integrate the theoretical aspect and practical aspect of career readiness. From the Competence Theory, some concerns raised about cognitive ability will help undergraduate students communicate in different situations effectively, other than fostering specific skills that can lead to interactive interaction, and inculcating interpersonal ability with an emphasis on metacognition, flexibility, and curiosity, all of which are potential predictors of their employability and career adaptability. Recent research share the same tone, where it is mentioned that the three domains are indeed intertwined and mostly correlated (Park, Tsukayama, Goodwin, Patrick, & Duckworth 2017; Pelowski, Gerger, Chetouani, Markey, & Leder, 2017). The overlap between these domains, however, will require the undergraduates to change to real-world conditions constantly so that their adaptability and employability in the 21st century cannot be denied.

Fourthly, the finding of this study does not deviate from that of the existing literature (Burrus et al., 2013; Kyllonen, 2012), which states that the skill domains required in the 21st century have the tendency to overlap (Lamb, Maire, & Doecke, 2017). The intertwined domains have given evidence of the importance of integrating the skills according to the objective of the P21 framework, namely the integration of life and career skills (social and cross-

cultural skills, flexibility and adaptability, and initiative and self-direction) with learning and innovation skills (critical thinking and problem solving and creativity and innovation). The findings are consistent with the extant findings, which widely acknowledge that complex problem-solving (Coetzee & Harry, 2014; Mellors-Bourne et al., 2015), critical thinking (Brown, 2015; Chan et al., 2015), and creativity (Coetzee & Schreuder, 2018; Ebenehi et al., 2016; Frey & Osbourne, 2017) heighten the chance of graduate employability. Nonetheless, of late, people management and coordinating with others were acknowledged as a significant domain for employability (Chong & Leong, 2017; Coetzee & Schreuder, 2018). In addition, current studies have reported evidence of ill-equipped new graduates entering the workforce. Thus, this study suggests that these skill sets should be tested together with the Career Construction Theory because these overlapping skill sets define the competency of graduates that conversely, predict if they are employable or otherwise. Furthermore, the research findings maintain that 21st century skill sets cannot be unraveled independently or pooled into a single non-cognitive category because emerging evidence indicates that effective career adaptability can be achieved through the interpersonal, intrapersonal, and cognitive competencies' teaching and learning (Wrahatnolo & Munoto, 2018).

Fifth, this study is also on the same path as Jackson (2016), that the scope of skills-based theories is too narrow and the complexity of graduates' career adaptability is not properly and fully dealt with. In this new era of technologies and new economies, this study agrees with the new, broader definition of employability given by Oliver (2015, p.56), which is '*students and*

graduates who can discern, acquire, adapt and continually enhance skills, understanding, and personal attributes that make them more likely to find and create meaningful paid and unpaid work that benefits themselves, the workforce, the community and the economy as a whole'. Besides that, Jackson (2016) related this aspect to further make sense of the connections between skills, knowledge, and attitudes and how they accommodate well into the undergraduates' ideology, culture, qualities, and conduct in their desired career. As the graduate comes up with this new identity, he or she will have a better preparation to adapt to fulfilling future career prospects and facing the daunting work environment.

5.4 Practical Contributions

Employability is known to hold three broad definitions, namely sustainable employability, immediate employability, and immediate employment (Blokker, Akkermans, Tims, Jansen, & Khapova, 2019; Bozionelos, Lin, & Lee, 2019; Klug, Drobnič, & Brockmann, 2019; Pinto & Ramalheira, 2017). Sustainable employability is to be the main definition in this study—not only in identifying graduates' preparedness to work based on their possession of future skill sets to adapt to a future career, but also in investigating their purpose and life direction as they try to adjust to work changes and workplace challenges. The study then, practically contributes to the literature in five significant ways.

Firstly, the contribution to the future graduates. It is observed that graduates will be able to control the outcome of their employability skill sets but will have less control over work changes and workplace challenges.

Nevertheless, they can make an effort to participate in strategies that promote employability when in university and beyond to enhance their life and career skill sets. In fact, doing so will align with the processual perspective in that graduates that form employability skills and adaptation to their future career will fulfill the perceptions and in-demand skill sets of their employers. In contrast, the possessive perspective states that societal positioning will determine employment status, i.e. one's position will guarantee one's employability (Holmes, 2013).

In contrast, since final year undergraduates will only be motivated to learn and acquire a skill if they perceive its importance in determining their careers in the future. Therefore, this study provides findings with important implications that would benefit educators and the higher education sector. This study emphasized that universities should concentrate on incorporating skills into the curricula that would help undergraduates adapt to their career life in the future. This is crucial, as undergraduate students have not been taught how to adapt to the shifting socio-economic conditions that are expected to bring change to the workplace in the future. The experiences and subjects that the students take up could determine their adaptability to their future career. Furthermore, the knowledge gathered from the subject discipline will shape the skills and attitudes of students through varying experiences that could shape their career adaptability; in turn, developing their employability skills and graduate attributes such that employment sustainability is achieved (O'Connor & Bodicoat, 2017; Savickas, 2013). Attitude, skills, and knowledge change and do not remain the same in the workplace setting, so undergraduate students must

learn to construct, amend, and embark on a professional-oriented process and apply it as a lifelong learning process to ensure sustainable employability (Christensen & Klemsda, 2019).

Secondly, the contribution to the institutions of higher learning. While most researchers recognize the importance of the authenticity of subject discipline, not much focus has been put on the issue of 21st century skills sets in the context of career adaptability. This research has proven that socio-economic conditions could disrupt the skill sets required in the future, so a better construction of the adaptability construct in assisting student's transitions into the challenging labour force is required. As such, experience-sharing sessions by industry professionals on the necessary skill sets to better adapt to the career world are appropriate and recommended.

Furthermore, the tertiary education sector and educators should search for ideas and input from the industry to ensure that the subject discipline is relevant and fits the industry requirements. This is because employers always argue about the lack of realistic expectations conveyed to students by the tertiary education sector and the educators (McMurray et al., 2016). Furthermore, past research has also argued that tertiary education fails to align the transition pedagogy with university learning experiences to address the modern working world that is becoming more demanding and challenging. T

This study proved that 21st century skill sets ensure career adaptability. The study suggests that universities should implement curricula that incorporate and reflect purposefully and frequently the important 21st century skills via tasks and responsibilities to students. Rudolph et al. (2017) stated that it is important

to incorporate these skills early on in order to ensure that the students can practice, recognize, cultivate, and explore their capabilities and the take-up of these skills to suit their desired career. In turn, students will be able to develop more in-depth knowledge and skills to assist them in understanding and constructing the attitudes required for their future careers besides honing their decision-making skills and self-management towards that end (Belwal et al., 2017).

Thirdly, the contribution to the employers. The increasingly competitive labour market has forced employers to favor attitudes complemented by skills and knowledge necessary to gain and sustain the competitive advantage of the business. To be at par with industry requirements, the course curricula should develop more flexible strategies that can be embedded into multiple disciplines rather than restricting them to specific disciplines alone. For example, engineering students are perceived to possess more hard skills than soft skills while Business students are expected to possess more soft skills than hard skills. In reality, both disciplines require the students to possess more than the soft and hard skills, and instead have more embedded attributes that are not easy to replace, which will enable them to develop concern, control, curiosity, and confidence in their prospective career. These factors are important due to the current organizational structure that is more egalitarian, performance-based, and matrix-like, which require the employees to be resilient, and able to handle work tasks, changes, and challenges, particularly in the Fourth Industrial Revolution era, which has brought massive changes to the employment landscape of today (Rudolph et al., 2017). As such, a robust graduate employability framework

must include the skills and abilities needed to successfully shape and adjust the graduate to the ever-changing professional environment (Shivoro, Shalyefu, & Kadhila, 2018).

Fourthly, the contribution to the researchers. The research framework addresses the suggestion given by current research in that 21st century skill sets should be incorporated to ensure students can adapt to their careers and increase their employability (Guan et al., 2019; Wilkins-Yel, Roach, Tracey, & Yel, 2018). Employers are now demanding more well-rounded graduates that will be more flexible at their work-roles with the focus now shifting to providing graduates with transferable skills, which will not be easily replaced by artificial intelligence or robots. The framework will also help the tertiary education sector to strategize and plan to create and improve the supply of talent to the labor market. Interactive and encouraging engagements between the industry and the tertiary education sector could enhance the teaching and learning process and improve the graduate skill sets, so this initiative should be formally structured, incentivized, and sustainable to benefit the changing ecosystem. This win-win model will allow the creation of work-ready graduates.

Finally, the contribution to the policy makers. Since Emirati graduates' employability skills are reflected in the provision of Emiratization, understanding the relationship between 21st century skills and career adaptability will offer valuable insights for academia and policymakers for the formulation of strategies and action plans to continually update Emirati students' transferable skills that are crucial for long-term success in human capital sustainability under the Emiratization policy. This is consistent one of

the key priorities in the Abu Dhabi Economic Vision 2030 under Social and Human Resources Development trust, which to develop a highly skilled and highly productive workforce in the years ahead. This study provides a foundation for education and training reformation to set motion to address the skills gap and to ensure the supply of suitably qualified employees to meet the shifting requirements of the private sector. To increase the larger portion of Emirati employment in the private sector, the Ministry of Human Resources and Emiratization should incentivize the Nationals to address career adaptability issue in private sectors as well as an effective instrument to upgrade the skills of the workforce and enhance productivity.

5.5 Limitations and Future Research Directions

Besides the study's important contributions, there are also limitations that were faced. The first limitation is that the sample consists of undergraduates from different universities across the UAE. Therefore, the results may not be generalizable. Nevertheless, the senior Emirati undergraduate students in this sample must undergo at least 90 credit hours across the university program; hence, the sample is sufficient for the purpose of discovering new knowledge and conducting experiments. Moreover, not many studies have investigated career adaptability and linked it with 21st century skill sets from the lens of employers, students, and universities in the GCC, and particularly in the UAE. Therefore, studies in the future are recommended to apply the model proposed in this work and test its generalizability on different cultures and sub-cultures, different student nationalities, different educational levels, and different

programs. In fact, new insights could be reached if more participants and different sample groups were involved in future studies. It is also important to note that the robust economic growth of the UAE has attracted a labor force that will create a dynamic culture in the future.

Second, for higher education, the inflated senior undergraduate student's perceptions of their skill sets and capabilities may create a barrier to effectively measuring the study framework. There is a wide gap between the students' perception of their mastery of a certain skill set and the actual performance standards required by the industry (Jackson & Wilton, 2016). Therefore, this gap could be a future direction for studies aiming to challenge the curriculum design so that similarities in the tasks and content in learning and application could be determined; thus bridging the gap between the skills supplied by the university and that demanded by employers (More & Morton, 2017). Furthermore, this also provides prospects for conceptual studies to establish the points stated in the Competency Theory domains (Zlatkin-Troitschanskaia et al., 2018).

Thirdly, additional domains based on the P21 framework could be explored in future research to include the key subjects and interdisciplinary themes of the 21st century (e.g., global awareness, environmental literacy, cultural literacy, health literacy), and the media-driven environment (e.g., information, media, and technology skills), as well as theories that will survive this age in which geographical barriers are no longer an issue. Moreover, future researchers should also consider other students' career-related opportunities and outcomes, such as beneficial economic outcomes, owing to the unique setting

of each workplace and the impossibility of generalizing the workplace and the actual experience that the graduates will face.

Fourthly, the future researcher is also encouraged to introduce moderating or mediating variables (e.g., cultural dimensions) and the Big-Five personality traits to link between 21st century skill sets and perceived employability. This new approach is important because the field of psychology shows that more sophisticated methodology could be developed and turned into statistical methods for more complex research hypotheses when moderation and mediation effects are accounted for (Fairchild & McQuillin, 2010).

5.6 Conclusions

An understanding of the 21st century skill sets and the extent of graduates' adaptability to their future career for employability sustainability will benefit all stakeholders. From the government's perspective, innovation, and enhanced competitiveness as a result of the above initiative would add value to the industry and provide a greater economic return on public investment. Secondly, from the universities' perspective, industry engagement will be improved, and the university's profile and reputation enhanced. Lastly, from the graduate's perspective, these skills will help them transition better to the workplace environment, as well as provide them with the means to achieve greater opportunities to advance in their career and develop on a personal level (Jackson & Wilton, 2016; Savickas, 2013).

The business landscape is fraught with volatility and uncertainties. The Fourth Industrial Revolution is currently disrupting traditional business models

and operations, which have changed the needs and expectations of future employees. The foreseeable future will likely see a continuation of this trend. Media-driven technology, and the digitally and globally interconnected world of today have prompted changes in the skill sets required to sustain careers, the competency blocks required, and the type, trend, role, responsibilities, and expectations of careers in the job market. Against such a background, graduates are expected to be able to perform virtual work, opening possibilities of working transnationally and out of the office. As a result, Emirati graduates will no longer be competing solely against other UAE graduates, but rather against a global workforce characterized by increased mobility (Jarrar, 2018). Therefore, it is important that universities help build the intellectual capacity of undergraduates and prepare them with the necessary 21st century skill sets required in this age, which is driven by information technology and media. It is anticipated that undergraduates, in order to adapt to future careers (Savickas & Porfeli, 2012), will encounter learning that is not as formal in the future, where the most emphasized traits will be exploration and discovery, together with reflection and curiosity as the foundations, and inquiry-based contextual as the norm (McGuigan, Sin, & Kern, 2017).

This study found that many Emirati graduates were overconfident that they had the skills required to survive in the 21st century job market, when in actual fact, employers felt that they were vastly underprepared. These factors could significantly impact the future job market. Occupations and specialties that are most demanded today did not exist ten or even as recent as five years ago, with the future expected to see a continuation of this trend (Samans &

Zahidi, 2017). In addition, Emirati undergraduates perceived that creativity was not an important factor in helping them adapt to their careers and instead emphasized more on critical thinking, the ability to coordinate with others, people management, and complex problem-solving skills. This result contradicts the UAE business leaders' expectation, which ranked creativity as the most important skill set to adapt to a future career. This result may stem from the fact that graduates feel that an excellent academic qualification is sufficient to guarantee them a job so they place lesser attention on preparing themselves with the skill sets beyond their excellent transcript. In addition, it may also be due to their ignorance in distinguishing between the exact in-demand future employability skill sets that may affect employment adaptability, the breakdown of these skills, and a lack of a proper gauge of their level of mastery of these skills.

The findings of this research also suggest that employers do value cognitive, intrapersonal, and interpersonal competencies that require experience and extensive years of development. As a result, the knowledge, skill sets, and attitudes of the graduates are significant determinants of their employability and adaptability in their future career (De Vos et al., 2011; Veld et al., 2015). In specific, employability is an instrument that the labor market uses to gauge the behavioral, cognitive and affective adaptability of the graduate (Fugate & Kinicki, 2008). The chances that graduates proactively meet the demands of their job is a consequence of whether or not they are able to demonstrate the skills that the labor market seeks and if they are adaptable to the workplace (Hennekam, 2015; McQuaid, 2006). Hence, the condition of employability

depends on social investment, which is an enabler of career adaptability (Clarke & Patrickson, 2008).

Tension exists between the UAE employers' expectation versus the actual performance of the graduate students, creating a significant gap in the UAE labor market. This research indicates that undergraduate students are overconfident and overoptimistic about their own chances of employability. They perceive high job prospects after graduation. The employment structure is undergoing rapid change due to today's age of technology and economies that are becoming more interconnected. Therefore, it is expected that the mismatch between future skill sets demanded and existing skill sets will widen. As a result, one solution to develop future skill sets and to narrow this gap is to anticipate and respond to the changing skills needed and supplied by the stakeholders.

Even if the higher education sector managed to develop the employability skill sets of its undergraduates, the problems plaguing the current uneven labor market will not all be solved; even if graduates are equipped with the relevant 21st century skill sets and attributes required by employers, studies have found that a major obstacle in supplying the right graduates for the job market is a deep-rooted tendency to hire graduates that fit a particular mold, not simply based on their merits (More & Morton, 2017; Raty et al., 2018). The advent of new technologies could have rendered some workers' skills irrelevant or have resulted in the under-use of available future skill sets (Frey & Osborne, 2017). Moreover, employers would find it difficult to assess the actual skills of the job applicants with limited or no work experience, therefore causing the new hire to not have the skills required by the job (Minocha et al., 2018). In sum,

ensuring that future skill sets are actively used also requires the stakeholders outside of the labor market to actively participate in removing the barriers to employment, through efforts that help graduates gain access to quality jobs that match the future skill sets required and afford greater flexibility for them to meet the ever-changing labor market conditions. Therefore, there is still concern about whether the policies to drive the development of employability skill sets can effectively narrow the skills–expectation gap (Jackson, 2015).

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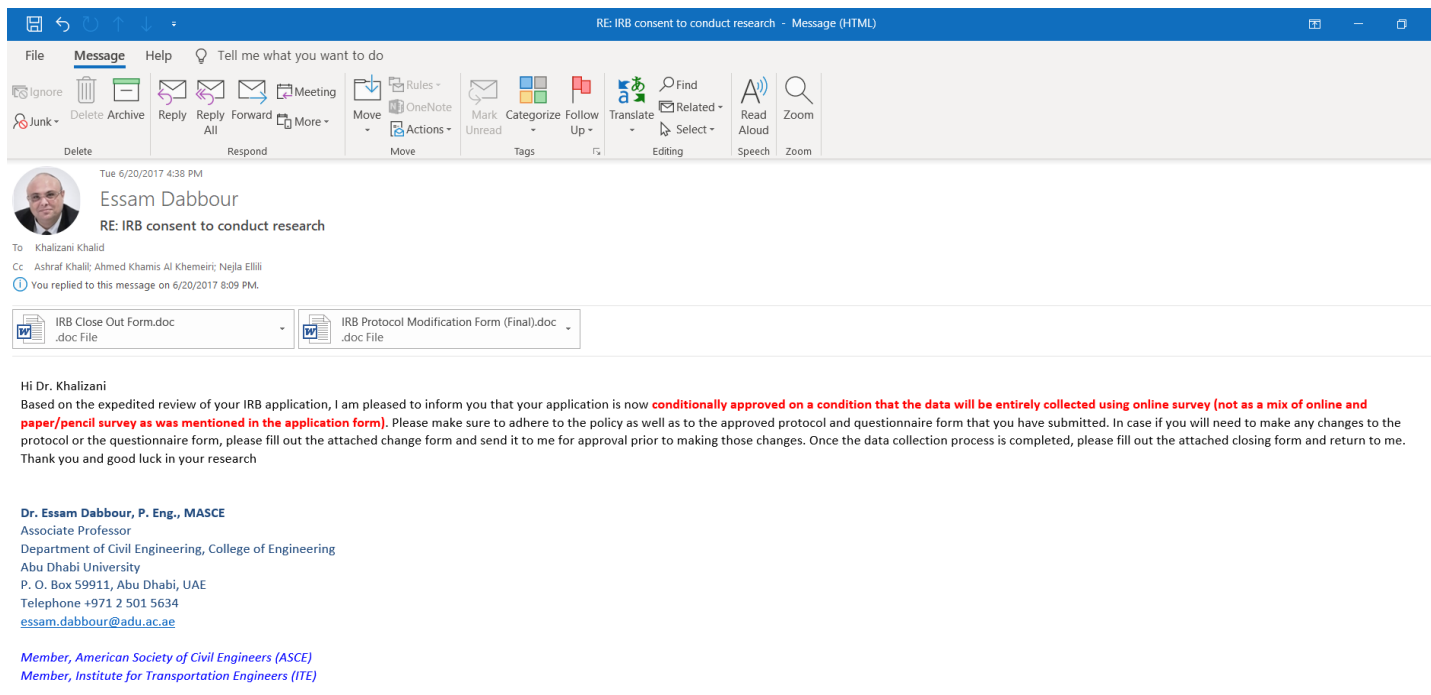
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Appendix A – IRB Approval



Appendix B – English Language Survey

Investigating undergraduates' perceptions on 21st century employability skills toward career adapt-abilities in the UAE

Dear Participant:

My name is Ahmed Khamis Khemeiri, and I am a doctoral student at Abu Dhabi University. I am inviting you to participate in a survey that will be used to investigate the undergraduate's perceptions on 21st-century employability skills toward career adapt-abilities in the UAE. Because you are undergraduate students, and your perceptions toward employability skills are crucial, I am inviting you to participate in this research study by completing the survey.

If you choose to voluntarily participate, your completion of the survey will demonstrate your consent that you have agreed to participate, and you may refuse to participate at any time. It would be greatly appreciated if you could answer all questions as honestly as possible. You will fill out socio-demographic questions, the 21st-century employability skills set survey, and career adapt-abilities survey that should take approximately 10 to 15 minutes. There is no compensation for responding nor there any known risk. To ensure that all information will remain confidential, please do not include your name.

Thank you for taking the time to assist me in my educational endeavors. The purpose of this research is to determine the relationship between five essential 21st-century employability skills and career adapt-abilities of undergraduates in the UAE. I am conducting a quantitative study to gain insight into the perceptions of undergraduates of their employability skills to explore possible gap that may exist.

If you require additional information or have questions, please contact me at the email address listed below. If you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any complaints to the Dr Khalizani Khalid, Doctoral Committee Chair, khalizani.khalid@adu.ac.ae

Sincerely,
Ahmed Khamis Al Khemeiri
1013556@students.adu.ac.ae

A. Demographic

Please (/) the relevant answers

1. 1. What is your gender?

Mark only one oval.

- ☐ Male
☐ Female

2. 2. What is your age group?

Mark only one oval.

- ☐ 20 and below
☐ 21 – 25
☐ 26 – 30
☐ 31 – 35
☐ 36 – 40
☐ 41 and above

3. 3. You are in which program?

Mark only one oval.

- ☐ Business Administration & Accounting
☐ Engineering & Computer Science

4. 4. What year you are?

Mark only one oval.

☐ 3rd Year

☐ 4th Year

B. We are interested in knowing how you feel about different skills for employability

For each statement listed below, please choose the number that indicates the extent to which you feel it is skill's characteristic of you.

Section 1: Complex Problem Solving

5. 2. I am capable of integrating information

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

6. 3. I am capable of modelling the structure of information

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

7. 4. I am capable of representing the problem-solving in a meaningful way

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

8. 6. I am capable of making plans to reach defined goals

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

Section 2: Critical Thinking

9. 1. I usually question what I heard in class

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

10. 3. I will make information material received in class as a start point to develop a viewpoint of the topic

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

11. 6. I will try to find options when I hear ideas that need to be tested

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

12. 7. I will use real example to identify the theory learned in the class

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

Section 3: Creativity

13. 8. I develop adequate plans and schedules for the implementation of new ideas

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

14. 14. I use existing information to develop ideas that are useful to the university

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

15. 17. I use existing materials to develop methods that are useful to the university

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

16. 19. I develop methods that are both original and especially useful to the university

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

Section 4: People Management

17. 2. The university involves students in decision makings

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

18. 3. The university-students' relationship are cooperative

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

19. 4. Students have trust in the university

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

20. 5. Communication is open in the university

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

Section 5: Coordinating with others

21. 1. The team members in my project help each other to get the work done

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

22. 3. The members of my team really respect each other

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

23. 4. The members of my team work well together

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

24. 5. The members of my team encourage each other to succeed when performing the task

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

C. Different people use different strength to build their careers. No one is good at everything, each of us emphasizes some strengths more than others.

Please rate how strongly you have developed each of the following abilities.

Section 6: Career Adapt-abilities

6.1 CONCERN

25. 1. Thinking about what my future will be like

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

26. 2. Realizing that today's choices shape my future

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

27. 3. Preparing for the future

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

28. 4. Becoming aware of the educational & vocational choices that I must make

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

29. 5. Planning how to achieve my goals

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

30. 6. Concerned about my career

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

6.2 CONTROL

31. 1. Keeping upbeat

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

32. 2. Making decisions by myself

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

33. 3. Taking responsibility for my actions

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

34. 4. Sticking up for my beliefs

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

35. 5. Counting on myself

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

36. 6. Doing what's right for me

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

6.3 CURIOSITY

37. 1. Exploring my surroundings

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

38. 2. Looking for opportunities to grow as a person

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

39. 3. Investigating options before making a choice

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

40. 4. Observing different ways of doing things

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

41. 5. Probing deeply into questions I have

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

42. 6. Becoming curious about new opportunities

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

6.4 CONFIDENCE

43. 1. Performing tasks efficiently

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

44. 2. Taking care to do things well

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

45. 3. Learning new skills

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

46. 4. Working up to my ability

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

47. 5. Overcoming obstacles

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

48. 6. Solving problems

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	☐	☐	☐	☐	☐	☐	☐	Strongly Agree

**YOUR COOPERATION AND PARTICIPATION ARE MUCH
APPRECIATED. THANK YOU.**

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 Google Forms

Appendix C – Arabic Language Survey

استعمالها لاستقصاء تصورات طلبة الجامعة لمهارات إمكانية الحصول على وظيفة إزاء القدرة على التكيف المهني في القرن الحادي والعشرين في الإمارات العربية المتحدة

عزيزي المشارك:

اسمي أحمد خميس خميري، أنا طالب دكتوراه في جامعة أبوظبي. أدعوكم للمشاركة في دراسة مسحية سيتم استعمالها لاستقصاء تصورات طلبة الجامعة لمهارات إمكانية الحصول على وظيفة إزاء القدرة على التكيف المهني في القرن الحادي والعشرين في الإمارات العربية المتحدة. ولأنكم طلبة جامعيين، وتصورتكم إزاء مهارات إمكانية الحصول على وظيفة مهمة، أدعوكم للمشاركة في هذه الدراسة البحثية باستكمال الدراسة المسحية.

إذا اخترتم المشاركة طوعاً، فإن استكمال الدراسة المسحية سيظهر قولكم أنكم قد وافقتم أن تشاركوا، ولكم أن ترفضوا أن تشاركوا في أي وقت. إنه لمحل تقدير عالي أن تجيبوا عن جميع الأسئلة بصدق قدر المستطاع. مشملاً أسئلة الخصائص الاجتماعية الديموغرافية، ومسح مجموعة مهارات إمكانية الحصول على وظيفة في القرن الحادي والعشرين، ومسح القدرة على التكيف المهني والتي تستغرق 10 إلى 15 دقائق. ليس هناك تعريض للتجارب كما أنه لا تعرف أي مخاطر. لضمان أن تبقى كل المعلومات سرية، يرجى عدم تضمين اسمكم.

شكراً لكم لأخذكم الوقت لمساعدتي في مساعي التعليم. إن غرض هذا البحث هو تحديد العلاقة بين خمس من مهارات أساسية لإمكانية الحصول على وظيفة والقدرة على التكيف المهني للطلبة الجامعيين في الإمارات العربية المتحدة. إنني أقوم بدراسة كمية للحصول على فهم لتصورات طلبة الجامعة لمهارات إمكانية الحصول على وظيفة لهم لاستكشاف احتمالية وجود فجوة.

إذا كنتم تحتاجون معلومات إضافية أو لديكم أسئلة، أرجو أن تتواصلوا معي على عنوان البريد الإلكتروني المدرج أدناه. إذا لم تكن راضياً عن طريقة إجراء الدراسة، فيمكنك إبلاغ (بدون اسم إذا اخترت ذلك) أي شكوى إلى د. خالد زني خالد، رئيس لجنة الدكتوراه،

khalizani.khalid@adu.ac.ae

المخلص،

أحمد خميس خميري

students.adu.ac.ae@1013566

*مطلوب

يرجى (/) الإجابات المناسبة

القسم أ: نبذة عن الخصائص الديموغرافية

1. * ما هو جنسك؟ -1

□□□□ □□□□□□ □□□□□□□□□□.

ذكر

أنثى

☐

☐

2. * ما هي مجموعتك العمرية؟ -2

□□□ □□□□□ □□□□□ □□□.

- وما دون 20
- سنة 21 - 25
- سنة 26 - 30
- سنة 31 - 35
- سنة 36 - 40
- سنة فما فوق 41

☐
☐
☐
☐
☐
☐

3. * يرنامجك هو -3

□□□ □□□□□ □□□□□ □□□.

- إدارة أعمال ومحاسبة
- هندسة وعلوم حاسوب

☐
☐

4. * في أي سنة أنت؟ -4

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- السنة الثالثة
- السنة الرابعة

☐
☐

القسم ب : إننا مهتمون بمعرفة كيف تشعر إزاء المهارات المختلفة
لإمكانية الحصول على وظيفة

لكل جملة مدرجة أدناه، يرجى اختيار الرقم الذي يشير للحد الذي
تقدر أنها صفة مهارية لك

القسـم 1: حل المشاكل المعقدة

5. * أستطيع دمج المعلومات -2

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	1	2	3	4	5	6	7
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐
أوافق بشدة							

6. * أستطيع عرض بناء المعلومات -3

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لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

7. * أستطيع تمثيل حل المشاكل بطريقة ذات معنى -4

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

8. * أستطيع وضع خطط للوصول لأهداف محددة -6

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لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

القسم 2: التفكير النقدي

9. * عادة أستفهم عما أسمع في الصف -1

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

10. * أجعل من المواد الإعلامية المستلمة في الصف كنقطة بداية لتطوير وجهة نظر عن الموضوع -3

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

11. * أحاول أن أجد خيارات عندما أسمع أفكار والتي تحتاج إلى اختبار -6

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

12. * استعمل مثال حقيقي لتعيين النظرية التي تعلمتها في الصف -7

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

القسم 3: الإبداع

13. * أطور خطط وجدول مناسبة لتطبيق الأفكار الجديدة -8

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أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

14. * استعمل المعلومات الموجودة لتطوير أفكار مفيدة للجامعة -14

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أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

15. * استعمل المواد الموجودة لتطوير أساليب مفيدة للجامعة -17

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أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

16. * أطور أساليب أصيلة ومفيدة بشكل خاص للجامعة -19.

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

القسـم 4: إدارة الأفراد

17. * تُشرك الجامعة الطلبة في اتخاذ القرارات -2.

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

18. * علاقة الجامعة بالطلبة هي علاقة تعاونية -3.

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

19. * لدى الطلبة ثقة في الجامعة -4.

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

20. * التواصل مقترح في الجامعة -5.

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

القسم 5: التنسيق مع الآخرين

21. * يساعد أعضاء الفريق في مشروعي بعضهم البعض لإنتاج العمل -1

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

22. * يحترم أعضاء فرريقي بعضهم البعض حقاً -3

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

23. * يعمل أعضاء فرريقي معاً بشكل جيد -4

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

24. * يشجع أعضاء فرريقي بعضهم البعض للنجاح عند أداء المهمة -5

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

مختلف الأشخاص يستعملون نقاط قوة مختلفة لبناء سيرتهم المهنية. ليس هناك شخص بارع في كل شيء، كل منا يشدد على بعض نقاط القوة أكثر من الأخرى

يرجى تقييم إلى أي درجة قد طورت كل من القدرات الآتية بقوة

القسم 6: القدرة على التكيف المهني

6.1 التلق

25. * التفكير كيف سيكون مستقبلي -1

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

26. * إدراك أن اختيارات اليوم تشكل مستقبلي -2

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

27. * الإعداد للمستقبل -3

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

28. * أصبح واعياً بالخيارات التعليمية والمهنية التي يجب أن اتخذها -4

□□□ □□□□□ □□□□□ □□□.

	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

29. * التخطيط لكيفية تحقيق أهدافي -5

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

30. * قلّى بخصوص سيرتي المهنية -6

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

6.2 التحكم

31. * أبقى متذائلا -1

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لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

32. * اتخذ قراراتى بنفسى -2

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

33. * أتحمّل مسئولية تصرفاتى -3

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

34. * التزم بمعتقداتي -4

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

35. * أتعلم على نفسي -5

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

36. * أعمل ما هو صحيح لنفسي -6

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

6.3 حب الاستطلاع

37. * استكشف محيطي -1

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

38. * البحث عن فرص للنمو كشخص -2

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

39. * استقصاء الخيارات قبل الاختيار -3

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

40. * ملاحظة مختلف الطرق لعمل الأشياء -4

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

41. * اتقصي بعمق الأسئلة التي لدي -5

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

42. * أستطلع عن الفرص الجديدة -6

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

6.4 التتمة

43. * أداء المهام بكفاءة -1

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	1	2	3	4	5	6	7	
لا أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	أوافق بشدة

44. * الاهتمام بعمل الأشياء بشكل جيد -2

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

45. * تعلم مهارات جديدة -3

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

46. * إعداد نفسي إلى قدراتي -4

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

47. * تجاوز العوائق -5

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

48. * حل المشاكل -6

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	1	2	3	4	5	6	7	
أوافق بشدة	☐	☐	☐	☐	☐	☐	☐	لا أوافق بشدة

إن تعاونكم ومشاركاتكم محل تقدير عالي
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