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COMPETENCY MODEL ASSESSMENT: PARTICIPANTS REACTIONS IN A UAE OIL COMPANY

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Under the Supervision of Dr. Abdul Karim Khan

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Declaration of Original Work

I, Nadya Shafeeq Abdulrahman H. Al Mannaee., the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this dissertation entitled "*Competency model assessment: participants reactions in a UAE oil company*", hereby, solemnly declare that this dissertation is my own original research work that has been done and prepared by me under the supervision of Dr. Abdul Karim Khan, in the College of Business and Economics at UAEU. This work has not previously been presented or published, or formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my dissertation have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this dissertation.

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Abstract

Purpose: The purpose of this study is to examine the factors that make the competency model effective from the perspective of the trainees in an oil company in the United Arab Emirates. Identifying these factors will be of help to other sectors as they implement similar programs. Competency based programs could help to upgrade the skills of UAE nationals and give them a better chance of employment; at present employers perceive UAE nationals negatively, as lacking skills. *Design/Methodology/Approach:* The reaction level of the Kirkpatrick evaluation is used in this study. A model is created to study the relationship between the competency model design, work environment variables and the perceived effectiveness of the competency model. Next, a questionnaire is used to measure the perceptions of the trainees in one oil company who are still undergoing or have completed competency-based model. Quantitative methodology is used in this study, as structural equation modeling is utilized to analyze the collected data. *Findings:* The factors that contribute to the effectiveness of the competency-based model are the competency model design, i.e. the competency model goal, the relevance of the content and material to the trainees' job, the assessment of the trainees' competencies and the little or no coaching that they receive. *Limitations:* This study was conducted in one oil company and among 375 trainees only. For this reason, the results cannot be generalized to other contexts where a similar program is implemented. The variables that are beyond the control of the company, such as the trainees' characteristics and peer support from the work environment, were outside the scope of the study. *Originality/Value:* This research will help to close the gap that previous studies have indicated in the application of competency models, their evaluation and their effectiveness. It will add value to the efforts of the National Qualification Authority in Abu Dhabi, by providing increased understanding of the factors that make the competency model effective. Such models could then be implemented across different sectors in the UAE to develop the intended competency levels of UAE nationals across various fields of work.

Keywords: Oil and gas sector; Competency models; Competency program; Effectiveness; Competency-based training; Employee satisfaction; Structural Equation Modelling

Title and Abstract (in Arabic)

تقييم نموذج الكفاءة: تصورات المتدربين في شركة بترولية بدولة الإمارات العربية المتحدة

الملخص

إن الغرض من هذه الدراسة هو فحص العوامل التي تجعل نموذج الكفاءة فعالاً من حيث منظور المتدربين في شركة بترولية بدولة الإمارات العربية المتحدة، إن التعرف على هذه العوامل سيساعد القطاعات الأخرى كثيراً إذ أنها تطبق برامج متماثلة. إن الكفاءة القائمة على البرامج يمكن أن تساعد في رفع مستوى مهارات مواطني دولة الإمارات العربية المتحدة وتتيح فرص عمل أفضل، حالياً ينظر أصحاب العمل إلى مواطني الدولة نظرة سلبية تتمثل في أنهم يفتقرون إلى المهارات. يستخدم مستوى التفاعل في تقييم كيك باتريك في هذه الدراسة. وتم إعداد نموذج لدراسة العلاقة بين تصميم نموذج الكفاءة والمتغيرات في بيئة العمل والفعالية المتوقعة من نموذج الكفاءة. ويتم بعد ذلك استخدام استبيان لقياس تصورات المتدربين في شركة بترولية واحدة منهم من كان يخضع لنموذج قائم على الكفاءة خلال هذه الدراسة و منهم من كان قد انتهى من ذلك. استخدمت منهجية الكمية ومنها نموذج معادلة الإنشائية في هذه الدراسة لتحليل البيانات التي تم جمعها.

أهم نتائج هذه الدراسة أن العوامل التي تساهم في فعالية النموذج القائم على الكفاءة هي تصميم نموذج الكفاءة أي هدف نموذج الكفاءة وصلته بالمحتوى والمادة لوظائف المتدربين وتقييم كفاءات المتدربين والقليل من التوجيه أو عدمه الذين يتلقونه. من القيود أنه تم إجراء هذه الدراسة في شركة بترولية واحدة بين 375 متدرب فقط لذا لا يمكن تعميم النتائج على السياقات الأخرى حيث يتم تطبيق نفس البرنامج، إن المتغيرات التي تكون خارج نطاق سيطرة الشركة مثل خصائص المتدربين ودعم الزملاء من بيئة العمل كانت خارج نطاق هذه الدراسة.

يساعد هذا البحث لسد الثغرة التي أشارت إليها الدراسات السابقة في تطبيق نماذج الكفاءة وتقييمها وفعاليتها. وسوف تضيف قيمة إلى جهود هيئة التأهيل الوطنية في أبوظبي من خلال إتاحة فهم أفضل للعوامل التي تجعل من نموذج الكفاءة نموذجاً فعالاً. ومن ثم يمكن تطبيق هذه النماذج في مختلف القطاعات بدولة الإمارات العربية المتحدة لتطوير مستويات الكفاءة المنشودة لمواطني الدولة في مختلف ميادين العمل.

مفاهيم البحث الرئيسية: قطاع النفط والغاز، نماذج الكفاءة، برنامج الكفاءة، الفعالية، التدريب القائم على الكفاءة، رضاء العاملين.

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Dedication

To my beloved parents

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List of Abbreviations

AC	Abstract Conceptualization
AE	Active Experimentation
ASV	Average Shared Variance
AVE	Average Variance Extracted
BEI	Behavior Event Interviewing
MSV	Checking the Maximum Shared Variance
CLF	Common Latent Factor
CMB	Common Method Bias/variance
CHWs	Community Health Workers
CAI-CHW	Community-Academic Initiative
CFI	Comparative Fit Index
CAMS DFW	Competency Assurance Management System Development Framework
CR	Composite Reliability
CE	Concrete Experience
CFA	Confirmatory Factor Analysis
EQF	European Qualifications Framework
EFA	Exploratory Factor Analysis
GFI	Goodness-Of-Fit Index
IPMA-HR	International Public Management Association for Human Resources
IFDI	Inward Foreign Direct Investment
KMO	Kaiser-Meyer-Olkin
LTSI	Learning System of the Transfer Inventory
MCI	Managerial Charter Initiative

NVQ	National Qualification Standard
O	Observation
OJT	On-the-job Training
PDP	Personal Development Plan
P	Product
Q	Question
RO	Reflective Observation
RMSEA	Root Mean Error of Approximation
RMR	Root Mean Square Residual
SDL	Self-Directed Learning
SD	Standard Deviation
SRMR	Standardized Root Mean Residual
SMEs	Subject Matter Experts
TLI	Tucker Lewis Index
UAE	United Arab Emirates
USIA	United States Information Agency
VIF	Variable Inflation Factor
VET	Vocational Education and Training

Chapter 1: Introduction

1.1 Background of the Problem

In 1971, the United Arab Emirates (UAE) was formed; from an economic standpoint the UAE is now growing quickly. For example, the UAE's stock of Inward Foreign Direct Investment (IFDI) increased from US $ 1.1 billion (1.5% of GDP) in 2000 to US $ 85.4 billion (23.7% of GDP) in 2011. The IFDI stock of the UAE exceeds the total stock of Kuwait, Bahrain, Oman and, Qatar put together (Mina, 2012). This shows the attractiveness and competitiveness of the UAE as a destination for foreign investment (Mina, 2012). The country ideally should depend on its own nationals and one of its goals is to develop them professionally. But the UAE depends heavily at present on expatriate employees. In 2010, 95.8% of the workforce consisted of non-nationals and only 4.2% of the workforce were nationals (Forstenlechner & Rutledge, 2011). The recruitment of expatriate employees is due to the insufficient supply of competent national labor. In addition, there is a gap between the market requirements and graduates' skills. The supply of national labor from universities does not match the demand from companies. The CEOs of the UAE blame the weak connection or lack of communication between education and the labor market. Even the companies lack confidence in the productivity and efficiency of the indigenous workforce who are holding senior management and middle management posts. This has resulted in low levels of confidence in the competence of younger and less experienced indigenous workers. This is the reason for the high recruitment of expatriate employees (Lootah & Simon, 2009). CEOs from the UAE (about 94%) speak of recruiting expatriates to fill important positions in their companies (Al Waqfi & Forstenlechner, 2010, 2013; Lootah & Simon, 2009). The diversification of the UAE's economy has brought a need to hire expatriates in order to develop the infrastructure, meet growth needs, support local businesses and help the UAE to become one of the regional economic powers (Al Waqfi & Forstenlechner, 2013; Lootah & Simon, 2009; Mohamed, 2002).

Nationalization policies were adopted in order to increase the number of UAE nationals in the workforce (Lootah & Simon, 2009). Quotas helped to increase the number of UAE nationals available to organizations, but various issues still prevent the success of these policies (Lootah & Simon, 2009).Such policies have been unhelpful because they are perceived negatively by the business leaders. The nationals are always compared disadvantageously to the expatriate workforce. An organization claims that one reason for its refusal to recruit nationals is their performance, which is perceived as low. The organization is afraid that if it hires UAE nationals, the standard of performance will drop and the overall performance standard of the company will decline (Forstenlechner, Lettice, & Özbilgin, 2012). A study by Al Waqfi and Forstenlechner (2010) has demonstrated negative stereotyping of Emirati nationals on the part of recruiters, whether expatriates or UAE nationals themselves. One of the factors that the study identified was that the skills and competencies of UAE nationals tend always to be negatively perceived. The study's respondents agreed that Emirati graduates need additional technical and functional training before they are ready to work. They lack communication skills, problem solving skills and practical experience (Al Waqfi & Forstenlechner, 2010). It is not easy to replace a superior performer and experienced expatriate by a less experienced UAE national. For this issue to be resolved, a serious of actions need to be taken by the existing education system in order to produce productive and competent graduates for the job market (Lootah & Simon, 2009).

In another study, the results show a positive relationship between the willingness of a recruiter to hire a UAE national and the education factor. UAE nationals tend to be favored over expatriates if they have an acceptable level of education (Forstenlechner, Madi, Selim, & Rutledge, 2012). However, only 49% of UAE CEOs expressed their confidence that the education system could produce students with adequate skills. 36% of the CEOs in the UAE believe that the number of these skilled students is small (Lootah & Simon, 2009). The current education system is unable to produce UAE graduates with the skills and competencies required by the private sector (Forstenlechner & Rutledge, 2010). This verdict is also supported by the Arab Competitiveness Report, which states that there is a mismatch between the available skills of young job seekers and the demands of the job market (Al Ayouty, Hanouz, Jorge, Mendez, & Kandil, 2012). The reason is the limited communication between colleges and businesses, which would otherwise ensure the alignment of the curriculum with the needs of the workplace. Consequently, colleges are producing graduates with irrelevant skills and the number of unemployed UAE nationals is increasing (Al Ayouty et al., 2012). When CEOs were asked about their expectations from the education system with regard to the skills most in demand, they listed communication, teamwork, analytical/critical skills, initiative/proactiveness, language, creative/innovative thinking, leadership and IT awareness. About 56% of the CEOs in the UAE agreed that the education system is based on theoretical knowledge rather than practical experience (Lootah & Simon, 2009). In order to build desirable skills in UAE graduates, the form of education must abandon memorizing and shift to skills acquisition. Internationally, "inquiry based learning" is being promoted to encourage students to strengthen their analytical skills. This approach encourages students to become "self-teachers" and always depend more on themselves than on the teacher. Independent study programs motivate students to make their own decisions without so much reliance on their teachers (Tough, 1981). In contrast, Arab countries still use the model of students' copying information written on the blackboard by teachers, with whom communication is rare (Lootah & Simon, 2009).

Recruiting foreign nationals, as noted above, may be a temporary solution to the problem of running the new sectors now starting in the UAE. However, in the long term, UAE nationals should be trained well so as to compete with and/or replace these expatriates, not least because they may at any time decide for some reason to go back to their home countries. Thus it is vital to improve the undergraduate programs as employers specify (Lootah & Simon, 2009); the UAE infrastructure is booming and the current and future opportunities in different aspects of the UAE economy create an urgent need to invest in such programs. For example, the country is investing in two new sectors, renewable energy and nuclear energy. In 2009, the International Renewal Energy Agency (IRENA) selected Abu Dhabi to host its headquarters, the first time that a UN agency had ever been headquartered outside Europe or America ("UAE Year Book," 2010). In 2009, too, the Federal Authority for Nuclear Regulation became responsible for supervising the peaceful nuclear energy sector within the country and the enforcement of nuclear safety and radiological standards. It is estimated that by 2020 the country's nuclear program will require at least 2100 to 2300 qualified workers ("UAE Year Book," 2010). In both sectors, companies are trying to provide scholarships in renewable and/or nuclear energy for students to take their first degree, master's degree or doctorate abroad ("UAE Year Book," 2010). They are trying to ensure enough graduates with the essential knowledge to run these new sectors.

One of the key recommendations which will serve to enhance the employment opportunities of UAE nationals is to invest in their education and training, since the education system is weak and the skills of graduates are usually below the required standard (Forstenlechner, 2010). Bridging the skills gap requires more than merely improving the education system: it is about improving vocational education and training altogether. Another recommendation by the CEOs is to develop a national vocational training strategy and to bring the existing vocational training institutions into line with international standards (Lootah & Simon, 2009). In order to implement Abu Dhabi's Economic Vision 2030, the country must invest in vocational and non-vocational training to upgrade employees' skills and raise their productivity ("Economic Vision 2030," 2012). One of the goals of the UAE government is to create a competitive knowledge economy by increasing the capacity of the Emirati workforce, developing vocational training and matching the education system's output with the requirements of the labor market ("UAE Government Strategy 2011-2013," 2012).

In an attempt to meet the international standards, the UAE on 23rd August 2010 issued federal decree No.1 to "Establish and maintain the National Qualifications Authority". The authorities plan to issue a qualification framework for the UAE which will be aligned to the European Qualifications Framework (EQF) and recognized internationally. The aim of the authority is to establish standards for qualifications in higher, vocational and professional education that are in line with the new technologies in order to meet the required standards at work (*Qualifications Framework Emirates Handbook*, 2012). This initiative is similar to that in the United Kingdom (UK) and other Europe countries (Lester, 2014). In the 1980s, when the UK workforce lacked the needed skills and qualifications to perform their job tasks, an employer-based training system or activity-based approach was introduced (Lester, 2014; Stokes & Oiry, 2012). The main reason for applying this system was to have a unified approach to professional qualifications (Allais, 2010). This training system adopts "outcome-based" or "learning outcome" approaches (Lester, 2014; Stokes & Oiry, 2012). It starts by identifying the competencies required to perform the different job roles across different sectors and industries. The Managerial Charter Initiative (MCI) in the UK contributed to identifying the required occupational competencies for various job disciplines. They combined clusters of competencies to form a competency framework. A competency framework or set of occupational standards as used in organizations are then linked to a national qualification standard which is referred to as an NVQ (Lester, 2014; Stokes & Oiry, 2012). Now, the same occupational competences are referenced/linked with the European Qualifications Framework (EQF) (Lester, 2014). Competency frameworks can be developed within an organization or can be adopted from the Vocational Qualifications Framework used in the country (Stokes & Oiry, 2012). In the UAE, the qualification framework, which will be referred to as the QFEmirates, is still under development (*Qualifications Framework Emirates Handbook*, 2012). Meanwhile, oil and gas companies in the UAE started to create their own customized competency frameworks or sets of occupational standards, which are not the same but are along the same lines as the NVQ (*Competence Assurance Management System (CAMS)*, 2009).

order to meet the required standards at work (*Qualifications Framework Emirates Handbook*, 2012). This initiative is similar to that in the United Kingdom (UK) and other Europe countries (Lester, 2014). In the 1980s, when the UK workforce lacked the needed skills and qualifications to perform their job tasks, an employer-based training system or activity-based approach was introduced (Lester, 2014; Stokes & Oiry, 2012). The main reason for applying this system was to have a unified approach to professional qualifications (Allais, 2010). This training system adopts "outcome-based" or "learning outcome" approaches (Lester, 2014; Stokes & Oiry, 2012). It starts by identifying the competencies required to perform the different job roles across different sectors and industries. The Managerial Charter Initiative (MCI) in the UK contributed to identifying the required occupational competencies for various job disciplines. They combined clusters of competencies to form a competency framework. A competency framework or set of occupational standards as used in organizations are then linked to a national qualification standard which is referred to as an NVQ (Lester, 2014; Stokes & Oiry, 2012). Now, the same occupational competences are referenced/linked with the European Qualifications Framework (EQF) (Lester, 2014). Competency frameworks can be developed within an organization or can be adopted from the Vocational Qualifications Framework used in the country (Stokes & Oiry, 2012). In the UAE, the qualification framework, which will be referred to as the QFEmirates, is still under development (*Qualifications Framework Emirates Handbook*, 2012). Meanwhile, oil and gas companies in the UAE started to create their own customized competency frameworks or sets of occupational standards, which are not the same but are along the same lines as the NVQ (*Competence Assurance Management System (CAMS)*, 2009).

Oil and gas companies want to gain sufficient returns on assets while guaranteeing health and safety standards during their operations. Regulations are increasing the pressure on oil and gas companies to show that their employees are competent to work at the production sites of these industries (Connor et al., 2014). In 1988, the oil producing platform in the North Sea "Piper Alpha" caught fire, and this led to a disaster in terms of human lives and capital. The reason for the incident was the lack of competence among the operators (Slaven, 1995). After the incident, the report written by Lord Cullen and the legislation and regulations to which the findings gave rise indicated the need for competent people to work on British production sites in the North Sea. This law forced operators to demonstrate, through an auditable management system, that the rig personnel were competent. Lack of competence will result in poor performance as regards safety and operation (Jeffries, 2000). The same law was then implemented in oil and gas companies in the United Arab Emirates, ensuring similar practice there (Al-Awai, Samir, & Binthabet, 2002; Al Matroushi, 2004). Being trained, however, is not the same as being competent. A competent employee is one who has the needed skills, knowledge and behavior to perform a specific task unsupervised (Novia & Fernandes, 2014). Traditional methods of training alone, i.e. classroom methods, cannot ensure competence. It is not enough to enhance the employees' safety performance, relying on theory; a competency framework consists of list of competencies/tasks that the employees under development need to know and do for the safe and effective performance of their tasks (Al-Awai et al., 2002). It is based on learning and immediately applying what is learned to the job in real work situations (Davidson & Al Zadjali, 1999). In traditional training the trainee takes a class and then returns to his job to apply what he/she learnt, which may or may not be relevant. In contrast a competency framework is created from the competencies that the trainee is required to demonstrate while performing the job role (Davidson & Al Zadjali, 1999). This is achieved by providing the trainee with his/her job related competency framework and ensuring that he/she is competent by regular assessments conducted during the program. These assessments ensure that the employee can perform his/her job tasks according the standards set by the company or the industry, if these are formalized (Davidson & Al Zadjali, 1999; Fletcher, 1997). In the oil and gas company studied for this research, the competency framework is given to the trainee/employee under development when he/she joins the company and undertaken in parallel with his/her usual work. All the above reasons justify using competency based management as a tool for training (Moussa, 2010).

Competency management involves a set of competencies or list of tasks relevant to the trainee's job that he/she needs to acquire or perform in order to be considered a superior performer/competent. Moving toward international occupational standards or competency models is the result of the increased number of retired employees, to close the skill and knowledge gap, to nationalize the workforce and to retain/attract talents (Connor et al., 2014; Ogle, Burley, Magan, Senapati, & Connor, 2011). The other reasons for using competency models are demographic changes and the boom in technology, products and process enhancements (Le Deist & Winterton, 2005). In oil and gas organizations, competency models are used not only for developing employees, but for ensuring safety for all technical production employees, and reducing hazards (Connor et al., 2014). Nowadays, claiming competence is not as welcome as proving it (Andrews, 2011). Competency models are used to identify the list of competencies required by the organization which then provides them to new employees in order to close their knowledge gap and bring them up to the standards of the company. A competency based assessment is used to ensure that the trainees have the knowledge and skills required for their role (Connor et al., 2014).

1.2 Purpose of the Study

Increasing the competencies of the employees will have an impact on the overall performance of the organization and will give it a competitive advantage (Subhash & Praveen, 2014). Organizations are exploring various training programs in their efforts to improve the performance of their employees. Having competency models in the training and development system helps to address the direct and relevant knowledge and skills required for the job. These developed competencies should be aligned with the organization's strategic objective (Dai & Liang, 2012). For the effective functioning of any organization, it is suggested that the effectiveness of the training provided to the employees should be evaluated (Subhash & Praveen, 2014).

To this end, this study seeks to identify the factors that make the competency model effective from the perspective of trainees. Such models can help in training and developing UAE nationals. Subsequently, this study will identify the factors that make the program effective. Identifying these factors will help other organizations to implement their own effective competency framework.

1.3 Significance and Nature of the Study

Vocational training/education is used internationally, yet, there is little information available in the literature regarding the evaluation of such models, even within the vocational education and training sector (VET) (Burnett, Clarke, & Nielsen, 1998; MacGraw & Peoples, 1996). This quantitative study contributes to the literature by identifying the factors that make competency model effective from the perception of trainees. The effect of the competency model design on the work environment factors and on the perceived effectiveness of the competency model is used. The first level of the Kirkpatrick evaluation model, namely, the reaction of participants. These factors are studied in one of the oil companies in the UAE among 375 trainees, both present and former is used. Studying these factors in this context helped to identify the relevant factors, and to support or reject the hypotheses established for this study. The perceived effectiveness of the competency model is defined as the perceived level at which the program/model reaches the intended objectives/goals or expected outcomes (Paek, 2005). In addition, this study contributes to the previous studies that have indicated a gap in the literature on the application of competency models and their effectiveness (Dai & Liang, 2012). This study will also contribute to the efforts of the National Qualification Authority in Abu Dhabi, after finalizing the qualification framework and identifying the list of occupational competencies for the different job disciplines across the various sectors. The study gives some idea of the factors that make the competency model effective from the perception of trainees. These factors will be valuable to consider during the implementation of competency frameworks in different sectors in the UAE to develop the intended competency levels across various industries.

1.4 Limitations

The targeted sample comprises only 375 participants who are present or former trainees of the program, the program is applied only for first entry level jobs and not throughout the hierarchy of the organization and the data were collected from only one oil organization in Abu Dhabi, the study cannot be generalized to other similar contexts that implemented similar program (Silverman, 2010). The data collection method was self-report by trainees who answered the questionnaire, but the latter may be influenced by social desirability bias either by trainees exaggerating or not revealing their feelings (Mooi & Sarstedt, 2011). The factors that lie beyond the control of the company, such as the trainees' characteristics and peer support from the work environment variables were outside the scope of this study (Buckingham & Coffman, 2007; Knyphausen-Aufseß, Smukalla, & Abt, 2009; Lionetti, 2012). For this reason, the self-efficacy and motivational characteristics of the trainees were not within the scope of this study. Nor were the characteristics of the supervisor, coach, advisor, assessor and verifier. Moreover, this study looked only at the reaction of the trainees, the Kirkpatrick first level of evaluation, and did not consider the other three levels. Finally, in the data analysis, only 18 items were used, while 30 items were removed because of cross loading with other items. This prevented the full set of items under each construct from being used.

1.5 Structure of the Dissertation

This dissertation document consists of 6 chapters. The discussion in Chapter 1, introduction (the current chapter) has outlined the research premise through a general introduction to the problem and has presented the research topic in terms of its purpose and significance for both theory and practice. Following the introduction, Chapter 2 reviews the current literature on the definition of competency and the competency model; its structure, benefits, use and application. The proposed way to identify the factors that make competency model effectiveness from the perspective of the trainees discussed and finally the application of the present model in an oil company in the UAE is considered. Chapter 3 deals with a theoretical model based on the competency model design, work environment variables and perceived effectiveness of competency model with each construct hypothesis. Chapter 4 concerns the quantitative research methodology. The chapter elaborates the development and design of the questionnaire resource instrument based on constructs from the theoretical model. This chapter also provides details of the data collection procedures, including the sampling and sample size, Chapter 5 presents the statistical analysis procedures, including the exploratory factor analysis, confirmatory factor analysis and structural equation modeling techniques that were used in this study and the results of the quantitative analysis. The chapter provides descriptive statistics on the demographic variables. The chapter also addresses the hypotheses of the theoretical model, on the basis of the results from the final hybrid model. Finally, Chapter 6 presents the conclusion and the implications of the results from the previous chapter. Recommendations for future studies are suggested at the end of the chapter.

Chapter 2: Literature Review

This chapter summarizes the major earlier studies that relate to the topic of the present dissertation. Scholarly journals were consulted to gain an understanding of the meaning of competency and the competency model. The reason for using competency based models, the history of competency and the international applications of the competency model, including that in the UAE, were all studied. The model that will study the factors that make competency model effective from the perspective of trainees is also discussed in this chapter.

2.1 Benefits of Competency Model

There are broader trends that affect HR and businesses globally; the panel of expertise from the Society for Human Resource Management lists these trends, which are first the economic impact – there is still an impact from the economy on the way that businesses allocate their budgets, form their HR policies and strategies and recruit their manpower. A second trend is competing for qualified/skilled manpower, for which businesses around the world are still competing. This demand affects the policies for the available benefits, the branding of companies and the outsourcing of some operations to secure skilled workers and lower cost. Third, technology and advances in communication have some influence: the vast growth of technologies has affected business, in particular when employees need always to communicate by means of the new technologies; i.e. candidates are now filtered and screened by means of new human resource systems designed for the purpose. Fourth, demographic changes: because they need to retire, aging employees will leave the work to be done by new generations of workers who will need training before they can undertake it. In addition, the increased diversity of tasks will have an effect on employment and current HR practices and policies (Panels, 2014).

The above trends show that businesses still need to think of the competencies that will enable their existing and future manpower to do their jobs better. This is one of the challenges for companies: to put the right employees on the right positions in order to reach the objectives of the firm (Connor et al., 2014; Daher & Gimenez S, 2011). Failing to do so could result in low productivity, an increase in the rate of turnover and lowered morale among the employees (Moussa, 2010; Ogle et al., 2011). Human Resources specialists should take the responsibility of finding solutions that will add value for businesses by securing competitive advantage (Dubois & Rothwell, 2004a). Using the behavioral characteristics of better-performing employees in the company could be a blueprint for the way forward in selecting recruits and developing their skills in order to elicit better performance from them (Ogle et al., 2011; Spencer & Spencer, 1993). One of the ways of solving this problem may be the implementation of a competency model (Dubois & Rothwell, 2004a; El-Baz & El-Sayegh, 2010; Ogle et al., 2011). Competency models are among the techniques seen as basic to Human Resource Management (McLagan, 1997). A competency model or framework is defined as the cluster of knowledge, skills and characteristics needed to effectively do a job (Lucia & Lepsinger, 1999; Whiddett & Hollyforde, 2008). Investing in a competency model has benefits which are exceeded only by those of developing Human Resources (Vazirani, 2010). Such a model can help businesses to identify the competencies that employees should acquire for performing their tasks, leading to higher performance. When an organization identifies its workers' competencies, it can focus its efforts in manpower selection, training and development, performance appraisal and succession planning (Lucia & Lepsinger, 1999).Using competency frameworks can help in managing the employees' competencies from the point of their selection until the moment of retirement. Developing a competency model helps to communicate a clear, precise set of objectives for a company's employees and managers which will help them to understand the requirements of their roles and tasks. Finding the gaps between the current performance and what is required leads to the creation of an employees' development plan (Connor et al., 2014; El-Baz & El-Sayegh, 2010). The assessment process used also helps to understand the needed technical and functional skills to improve performance (Connor et al., 2014). The benefits of competency models to the company include improving its employees' performance, because they demonstrate that they have the required competencies as defined in the framework during their assessment. During the assessment the assessor can identify the needed areas for improving their performance. Trainees are equipped with the needed safety standards and the company's goals. Competency models let employees gain many skills and the knowledge related to different areas, in particular if they are eligible for career progression. These skills support the nationalization policies implemented in the company (Al-Awai et al., 2002). Regarding the benefits to the employee, they include understanding the set of competencies/standards to perform the job tasks. The trainees in the competency model get the opportunity to cross-train in diverse roles. In addition, they get additional support from their supervisors and coaches and focused training in order to upgrade their skills. When employees get to know the required competencies from them, it helps them to build confidence by mastering the needed knowledge. The competency model is employee-centered and in order for the employee to pass in a number of competencies, it gets recorded and the list passed to the trainee. Finally, the evaluation of performance in the competency model can be more objective than subjective. This is because the performance measures are identified for each role and assessed accordingly (Abder & Thomas, 2003).

2.2 History of Competency Model

Understanding the benefits of competency models makes it more interesting to look at the related history. Competency profiling began with the ancient Romans, who used it to select soldiers and leaders (Wilson Burns, Smith, & Ulrich, 2012). In their analysis of competency management research and practice, Dai and Liang (2012) show a three-level pattern in the previous literature on competency management, based on the type.

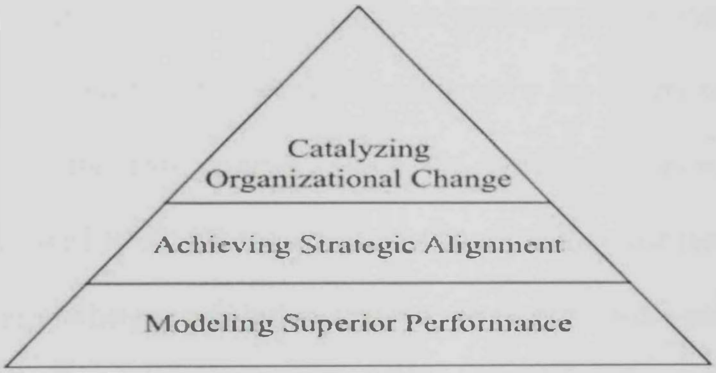

Figure 1: Competency management based on type

Early papers on competency management focused on modeling superior performance. The work of McClelland and later Boyatzis initiated the widespread application of "competency models in organizations". The initial research by McClelland (1973) focused on the concept of superior performance, which led companies to compare employees of superior performance with employees of average performance. They then identified the competencies that differentiated the former (McClelland, 1973). This started to become systematic in the early 1970s, when a high-ranking official from the United States Information Agency (USIA) with an interest in motivation and achievement attended a workshop conducted by Professor David C. McClelland. McClelland developed a personality test to identify attitudes and behaviors that were shared by high-performance employees. The USIA official believed that the McClelland approach could help the agency's selection process. He felt that the selection tests used at the time to recruit USIA employees showed little indication of how well they would perform in their jobs. The USIA asked McClelland if he could capture the attitudes and behaviors of high performance USIA officers so that the agency when selecting employees could use improved criteria instead of screening tests (Lucia & Lepsinger, 1999). McClelland and his colleague requested the USIA Director and other managers to provide them with the names of the top performers and of those perceived to be the lowest performers. They wanted to interview the two groups to find the differences between them. The interviewees were asked to describe three situations where they felt they had performed well and another three where they felt they had not. The interviewees were asked detailed questions in the interests of clarity. During the analysis, the detailed answers helped to identify the competencies of the high performance employees (Lucia & Lepsinger, 1999).

In 1982, Boyatzis followed the McClelland approach in identifying the competencies needed for superior performance by employees: his method was to identify the required skills, abilities and personality traits needed to achieve superior performance

(Boyatzis, 1982). His systematic approach to managers' superior performance attracted companies; it attempted to measure related training inputs and the accomplishing of outputs (Redman & Wilkinson, 2001). His research helped in finding such managerial/leadership competencies as a set of soft skills, which were termed "concern with impact", "use of socialised power", "efficiency orientation", "self-confidence", "proactivity and "conceptualization" (Mabey & Iles, 1994).

The focus later changed to attaining strategic alignment for the organization (Becker & Huselid, 1999). The second pattern started in 1990, when Prahalad and Hamel introduced into organizations the concept of "core competence". Core competence concerns the sharing of knowledge between personnel in an organization, in particular by means of technologies and production skills. Identifying the core competencies and ensuring that the employees have them, contributes to quality in the end product. This leads to differentiation and competitive advantage among competitors. Examples of companies between 1980 and 1988 which could identify their core competencies and thus raise their profits were Canon (growing by 264 %) and Honda (growing by 200 %) (Prahalad & Hamel, 1990). For this reason, competency-based models were encouraged as tools for managing and organizing employees. Employees with the right skills and knowledge contribute to and affect the overall performance of the organization. By having systems of competency-based Human Resource Management practices, organizations can move in a strategic direction and develop their corporate competencies (Lawler, 1994).

Finally, the focus of the research moved to catalyzing organizational change (Vakola, Soderquist, & Prastacos, 2007). It was found possible to use competencies as a tool to translate and communicate the company's vision into behavior indicators which employees can adopt (Sanchez & Levine, 2009).

When designing competency models, it is advised to consider all the above phases in the literature. First, identifying the competencies of superior performer employees as indicated by McClelland (1973) will help to identify the knowledge gap in new employees. This approach helps organizations in identifying the functional/role/technical competencies for these newcomers. The second phase of identifying the core competencies of the company as mentioned by Prahalad and Hamel (1990) helps in developing talents by which the goals of the organization will be accomplished and employees who also have the needed skills to compete against those of other companies. The final phase sees an advanced use of competency models when the business environment is influenced by external changes that force the organization to implement new strategic plans. Using competencies is a tool that can translate the strategic directive of the company to the employees.

McClelland's contribution to competency models did not stop at the development level; he also continued his work in competency assessment. He saw the limitations of using standardized psychological and intelligence tests for certain jobs, such as IQ tests and the Minnesota Multiphasic Personality Inventory. McClelland believed in using competency testing in place of standardized testing. As he put it: "If you want to test who will be a good policeman, go find out what a policeman does. Follow him around, make a list of his activities, and sample from that list in screening applicants" (McClelland, 1973). He recommended that five points should be considered when assessing competence. First the assessment should assess clusters of the competencies which form part of real work situations, not one aspect of a competency alone. Second, competency should be measured using different dimensions and several measures rather than one. Third, actual results should be used for the criterion-reference tests which are reflected in the proficiency statements of the competency clusters. Fourth, the validity measures of the assessments using face validity are important. Fifth, the tests of competency should allow the trainee to be spontaneous when answering. Unlike classroom tests, real work competency assessment is related to the situation or to context-specific competencies which should be judged in an open system (McClelland, 1973).

McClelland, with his colleague David Berlew, started the company Mcber to put into practice his idea of competency. Together they developed a method called Behavior Event Interviewing (BEI), in order to map competencies. They mapped the competencies of managers and entrepreneurs around the world. Since then, the use of competency models has become the norm. Many companies around the world now use competencies for decisions related to hiring, training, promotions, and other human resource issues (Lucia & Lepsinger, 1999). A variety of different competency models have been developed, but the most effective ones have unique characteristics. All of them follow McClelland's procedure of finding what leads to high performance and identifying outstanding employees, together with what and how they perform. The two primary rules here are: first, to identify successful employees without making judgments about their work and, second, to concentrate on what they actually do (Lucia & Lepsinger, 1999).

2.3 Competency Model in Training and Development

The present study focuses on the implementation of competency models in training and development. Traditional training and development techniques do not necessarily address the skills and knowledge required in doing a job. Using a competency model helps to focus on the required skills and not merely the latest trends in training (Davis & Olson, 1996-1997). The main benefit of using competency models in training and development is the focusing on the right and relevant skills and knowledge that affect job performance. They also help employees to assess their current level of performance and be aware of the standards/competencies needed to improve their effectiveness (Eubanks, Marshall, & O'Driscoll, 1990). Employees will be aware of what is required from them, then become proactive with regard to their own learning (Lucia & Lepsinger, 1999). They ensure that the training and development efforts/practices are aligned with the company's vision, mission, values, and strategies. This means that the competencies in the competency model not only support an employee's effectiveness on the job but also support the company's strategic goals. They secure the effective use of the time and resources spent in training and development, since these are invested in the right skills and knowledge for working efficiently. They provide a framework for the continuous involvement of coaching and supervising (Mukherjee, 2011). A competency model clarifies for coaches and direct supervisors what is required from the trainee at work. It also helps coaches to determine whether competencies can be learned on or off the job (Parsloe, 1995).

2.4 Adult Learning Theories

The link between using competencies in training and development is based on six theories. Competencies can be taught and developed on the basis of the way that people learn. These theories deal with *adult experiential education, motivation acquisition, social learning* and *self-directed change* (Spencer & Spencer, 1993), in addition to *self-directed learning* and *learning organization* theories.

2.4.1 Experiential Education Theory

The first theory which covers adult *experiential education* indicates that adults learn when they are exposed to the inputs outlined below (Knowles, 1976; Kolb, 1984):

- Abstract Conceptualization (AC): this is exemplified by reading, lectures, new ideas or theories. It takes the form of a set of "How to" guidelines.
- Active Experimentation (AE): this is exemplified by simulations and exercises. Its form is that of applying a theory or idea or following the guidelines for doing something.
- Concrete Experience (CE): this is the adult feedback from experimental behaviors
- Reflective Observation (RO): this is possible if adults are given time to think about the experiment and given feedback so as to think about the way to behave in the future.

Some adults would prefer one of the above inputs to all the others: however, learning will be more effective if each of these inputs is followed by the next (Spencer & Spencer, 1993).

2.4.2 Motivation Acquisition Theory

The second theory which is *motivation acquisition* or McClelland's theory of motive acquisition indicates that people can possess or enhance their core personality traits, for instance, motives and self-concepts, according to his twelve principles (McClelland, 1965). These principles are summarized below:

- Conceptual Models: when learners are provided with a new conceptual model for thinking about their behaviors, this model should be linked to their needs. To value its effects, they must understand the related outcomes of the model.
- Self-assessments: learners need continuous feedback during their progress. They need to know their current level of competency and how to reach their goal.
- Practice: educators need to use the new behaviors and ideas in a practical way. However, a simulated or structured environment is recommended for their application.
- Goal Setting: learners are recommended to have a plan with clear aims for the use of their competencies in everyday activities. Having a plan, setting the objectives, getting feedback from others and appraising themselves will give them encouragement as they do this. This will lead finally to goal alignment.

- Social Support: The right and safe environment is one of the elements that learners need, in order to put their new thoughts and behaviors into operation. Another important element is having a coach or a mentor who will help to maintain the concepts and behaviors once they have been learned in the training period. The last element is having a group of learners who speak the same competency language and encourage each other to practice it. Having such a group keeps up a continuous learning process for the members.

2.4.3 Social Learning Theory

The third theory, which is *social learning* (Bandura, 1969, 1977) indicates that people learn interpersonal skills by imitating the behavior of role models. This imitation can begin by observing the role model's behavior in different situations. Learners can acquire various competencies using such methods as watching films and videotapes of role models, and then being encouraged to copy the behavior, possibly by means of role play or similar activities. Trying these new behaviors and imitating the role model's behavior have been found effective in teaching interpersonal skills (Burke & Day, 1986; Dunnette & Hough, 1991; Latham & Saari, 1979).

2.4.4 Self-Directness Theory

The fourth theory, which concerns *self-directedness,* indicates that adult learners can enhance or change their behavior if the following three conditions are met:

- if they are not satisfied with the current situation (actual)

- if they have a clear idea about their future aim (ideal or goal)
- if they have a clear idea of the steps needed to change their status from Actual to Ideal (action steps)

Adults change only if they have the desire to do so. They feel the need to change only when they are not satisfied with their current level of competencies and are clear about the level of competency they want to achieve. When they know that there is a gap between their current level and their aim, then they get the encouragement to go through the suitable steps needed to change their status (Spencer & Spencer, 1993). This theory gives insight into the reason for giving the ownership for learning to the trainee or for ensuring that competency models are learner-centered because no-one will not progress on the program unless he/she feels the need to change.

2.4.5 Self-Directed Learning Theory

The fifth theory is Self-Directed Learning (SDL) which is one of the famous theories in adult education. This theory will be discussed in details because of its relevance to the competency-based model and it is used in the data analysis chapter of this study. It is defined as the process in which the learners take responsibility for their own learning with or without the assistance of others., which is similar to what is applied in the competency model. In SDL programs, learners take the initiative in identifying their training needs, setting up their learning goals, looking for the appropriate material for learning and evaluating their learning outcomes (Knowles, 1975). In the literature, there two conceptions of SDL, namely, self-teaching and personal autonomy (Knowles, Holton, & Swanson, 2012). Self-teaching ensues when a learner has decided to take responsibility for his/her own learning without depending on a professional teacher. The learner who takes control of the learning methods in such a way as to learn a subject is called a "self-teacher" (Tough, 1981). In personal autonomy, however, the learner is responsible for his/her learning as well as taking control of the objectives and aims of learning. Consequently, this results in internal change of the learner's consciousness; he/she then starts questioning the information learnt freely (Knowles et al., 2012). It may seem that the two concepts are the same but they are in fact independent. A learner can choose to learn in a teacher-directed instructional environment in which he/she has high personal autonomy. Choosing such an environment is simply a convenient option for the learner, either for faster learning or because of the learning style. There are cases when adults decide to learn using the traditional training approaches over self-teaching but this decision does not mean that they have given up their ownership or control of their learning. There are cases when the adults lose control over their learning when the supervisor/coach/teacher sets all the learning requirements for them. For this reason, the absence of some activities related to self-teaching is not the right indicator of personal autonomy. It should be noted that the purpose of SDL is that it builds personal autonomy (Knowles et al., 2012).

The model by Grow (1991) suggests that Self-Directed Learning is situational and the teacher's role should change according to the student's stage of learning. As shown in the table below:

Table 1: Grow's Stages in Learning Autonomy

Stage	Student	Teacher	Examples
Stage 1	Dependent	Authority, coach	The student is provided with direct feedback from the coach. At this stage, the coach tries to overcome resistance to learning and any difficulties, in addition to providing detailed informational sessions
Stage 2	Interested	Motivator, guide	At this stage the learning goals and strategies are decided. In addition, the motivator gives motivational sessions and guidance to the student.
Stage 3	Involved	Facilitator	The teacher at this stage will have the same status with the student. He/she will focus on holding facilitating discussions and group sessions.
Stage 4	Self-directed	Consultant, delegator	The teacher at this stage will let the student work independently on his/her project or individual work or in a self-directed study group

From the above table, it can be noticed that the teacher's job changes according to the student's learning stage. It should be noted that a highly self-directed environment will be frustrating for a learner who is at the first stage and vice-versa for a learner who is experienced and expert in the subject. For this reason, the learner's behavior towards a self-directed environment is affected by different variables, namely, the learning style, efficiency, social orientation, the learner's previous experience, previous learning socialization and locus of control (the extent to which the learner perceive the cause/control of events that affect them to be themselves (internals) or to lie in the external environment (externals)) (Knowles et al., 2012). In another study, the factors that could encourage learners to use SDL projects are internal locus of control, motivation to learn, support from peers and supervisors and self-efficacy (the learner's belief that he/she has the ability to succeed or face any difficulty) (Boyer, Edmondson, Artis, & Fleming, 2014)

In a study by Tough (1981) of 40 college students who were involved in a SDL project, it was found that there are tasks that the students can perform without the assistance of a teacher, i.e. dealing with their doubts about succeeding, choosing the place for learning, facing their dislike of a given activity that is important for the learning, spending time thinking whether or not to continue after reaching a certain goal. The other tasks are thinking of the amount of money to be spent on training materials and finally dealing with their demotivation toward achieving a certain goal. The tasks that will require assistance from a teacher/coach are deciding on the activities required for learning, recommending the resources for getting the information, choosing the goal, deciding how much time to spend on the task and finally, helping the student/learner with the difficult parts that they cannot learn alone. The role of the teacher/coach is to train the learner/student to become a self-teacher who can depend on him/herself. In addition, the material for such self-learning programs should be designed in such a way as to be understandable for the learner to work on by him/herself and the organization should arrange for the needed resources that will support the learning (Tough, 1981).

In 2000, Clardy expanded the concept of Self-Directed Learning to four types of project that are used in organizations: i.e. induced, synergistic, voluntary and scanning (Clardy, 2000). Induced Self-Directed learning projects are initiated by the company/authority. In these projects, the employee is required to learn the needed skills and knowledge in order to meet the minimum job requirements or work standards. This type is usually required when the employee is not aware of what is required from him/her in the job and he/she has a knowledge gap (this is the unconscious incompetence employee level) (Spencer & Spencer, 1993). In addition, employees do not always know where to find the information they need or can even confirm that they have the needed level of knowledge. For this reason, employees when they get the information from their supervisors or coaches can then get assessed by assessors who check their level of competency, skill and knowledge. However, employees still self-regulate their learning during the project. This type of SDL is good for employees in their first entry jobs. Vocational qualification certificates (industry certifications) or tests that are organized by a central authority or regulatory body or customized competency models at work usually provide candidate with the materials designed for self-study and notify the candidates of the standard needed to pass. This type of certification or test is found in induced SDL (Artis & Harris, 2007; Boyer et al., 2014; Clardy, 2000) and calls for the type of self-directed learning that the present study focuses on. The second type of SDL project is synergy, which is also called "gateway opportunities". In this type of SDL, the company provides the material for the learning but the employee can choose whether or not to learn this material. The level of knowledge is assessed by the employee him/herself. This type of SDL is useful for employees who know what is required from them but do not know where to find the needed information (Artis & Harris, 2007; Boyer et al., 2014; Clardy, 2000). The third type of SDL is voluntary; employees in these projects are the ones who initiate their own learning because they know exactly what to do and where to get the necessary information; in addition, they know how to evaluate their learning to achieve the required competency (Artis & Harris, 2007; Boyer et al., 2014; Clardy, 2000). The fourth type is scanning, it resembles voluntary SDL in that the employee knows exactly what information is needed and where to find it and the employees can evaluate themselves. The only difference is that scanning SDL projects are ongoing and there is no predetermined end (Artis & Harris, 2007; Boyer et al., 2014; Clardy, 2000).

2.4.6 Learning Organization Theory

During the 1980s, in addition to the above theories, another theory contributed to the development of competency in organizations: *learning organization* or *organizational learning theory*. A learning organization is the name for an organization that uses learning in order to excel in its business and attain competitive advantage (Argyris & Schön, 1995; Marquardt, 1996; Senge, 1990). This is similar to the aim of identifying the core competencies in the organization Senge, 1990). The concept of a learning organization became better known in the next decade through the writings of Senge (1990), who defined a learning organization as a place where employees continuously expanded their knowledge to reach their aims and goals. It was a place where employees were encouraged to think both individually and in groups. In these organizations, employees were continuously learning to learn together (Deb, 2001; Senge, 1990). The main factors that can contribute to the development of a learning organization are the work environment, the economic climate and customer expectations (Argyris & Schön, 1995; Marquardt, 2002; Senge, 1990). There is a symbiotic relationship/connection between learning organizations and self-directed learning (competency models). Factors such as the objective of the organization, values, culture and environment will have an effect on the use and nature of SDL projects. The need of SDL projects in a learning organization will depend on the trainees' needs and also the organization requirements (Confessore & Kops, 1998). Various themes can be identified from the interdisciplinary literature related to organizational learning, as follows:

- Personal competency-based individual learning is considered one of the main learning processes in organizations (Senge, 1990; Song & Chermack, 2008).
- Previous experience on the part of the employees affects the organizational learning (Nonaka & Takeuchi, 1995; Yoon, Song, & Lim, 2009).
- At the level of the employee groups in organizational learning, knowledge and information need to be integrated, structured and systematic (Garvin, 2000)
- Linking the learning process with the knowledge practices is an element of the organizational learning process (Nonaka & Takeuchi, 1995).

The level of learning, maintaining knowledge and renewing it affects the efficiency of the organizational learning (Huber & Huber, 1991).

2.5 Structure of a Competency Model

After looking at the benefits of the competency model, the history, the use of a competency model in training and development and the way in which it is linked to adult learning theories. the structure of the competency model is next described. Competency models/frameworks consist of the following (Mukherjee, 2011):

1. Competency clusters

As defined by White (1959), a competency is a combination of knowledge, skills, traits, motives, values, attitudes and any personal characteristics that affect an employee's job performance. Competencies can be measured against pre-defined standards and they can be enhanced through training and development programs (Parry, 1996). The term 'competency clusters' refers to related competencies which are combined within one cluster. For example, the "Dealing with people" cluster of competencies may include the following elements (Mukherjee, 2011):

- Team management
- Development of subordinates
- Managing relationships
- Motivation and inspiration

During the assessment of competencies, the assessor is the one who can identify which employees exhibit the desired behavior and which do not. Hence, competency models/ frameworks help to identify the competencies required before employees can work better. The competencies in the model or framework are specific to a role, a job, or a job family – a group of related jobs. Each job in any company has its own cluster of competencies or behaviors which are needed to do the tasks efficiently. Other competencies may be defined at the organizational level: these are known as the core competencies which all employees are expected to have. Finally, there are competencies which are defined for functional levels, e.g. HR competencies (Mukherjee, 2011).

Competency models are developed from three types of competency, as follows (Mukherjee, 2011; Rothwell & Graber, 2010):

- Core competencies:

  These form a cluster of skills and technologies which enable an organization to provide high quality value that is relevant to customer needs. When the organization defines its vision, mission and values, it should consider identifying its competencies. Competencies are considered core if they help the business to access different markets; they differentiate the business from other competitors if they help to enhance an end product for a company and accommodate customer needs and if they make products hard for competitors to copy and in this way help the business to succeed (Prahalad & Hamel, 1990). Core competence relates to sharing knowledge between personnel in an organization, in particular, knowledge about the use of technologies and production skills, identifying the core competencies and ensuring that the employees who have them contribute to the quality of the end product(s). This leads to differentiation and competitive advantage vis-à-vis a firm's competitors. Companies which fail to identify their core competencies are exposed to different risks, i.e. of overlooking growth opportunities that other competitors might spot, not having the right talent for meeting the business objectives and not having the right competencies for producing quality products (Hamel & Prahalad, 2010).

- Cross-functional competencies:

  These competencies are required from employees, whatever their job role, i.e. time management, planning, etc.

- Technical/functional/role competencies:

  These competencies are specific know-how as defined for specific jobs or job families, e.g. HR specialisms.

2. Proficiency levels

These are defined as the levels of competency that an employee should acquire in order to produce superior results. It is important to define competencies by using a consistent set of proficiency levels. Proficiency levels are used to compare employees who hold different positions or roles. It is always advisable to have the same levels of proficiency for the related jobs within an organization. In general, these are defined at five levels, namely, *beginning, elementary, intermediate, advanced and expert* (Mukherjee, 2011). These levels correspond to those in the model by Dreyfus and Dreyfus introduced in 1986 to calibrate a person's learning. This model describes the ascending levels as *novice, competent, proficient, expert and master* (Dreyfus & Dreyfus, 1980). Another model was defined in 1970 by Noel Burch who was working at Gordon Training International (Chapman, 2015; Reilly, 2012); this is the Conscious Competence Learning

Model. It assumes that an employee's growth from novice to expert means moving from unconscious incompetence to unconscious competence (Lombardozzi, 2007). The model consists of four stages of competence which are referred to as the four stages of learning a new skill, namely, *unconscious incompetence, conscious incompetence, conscious competence, unconscious competence* (Chapman, 2015; Howell, 1982; Reilly, 2012). In the first stage, *unconscious incompetence*, the employee is not aware that he/she does not have a particular competence or has too little of it (Howell, 1982). The employee needs to admit his/her lack of competence in order to be able to move to the next stage (Reilly, 2012). In the second stage, of *conscious incompetence*, the employee realizes the need to acquire a knowledge of a certain thing and the need to know how to do something, but he/she is incompetent in doing it (Howell, 1982). In the third stage, *conscious competence*, the employee knows how to do and does the tasks assigned to him/her but he/she is conscious of everything he/she is doing (Howell, 1982). In the final stage of learning, *unconscious competence*, the employee can do and perform any task. In addition, he/she does not think about what he/she is doing (Howell, 1982). Employees reaching this stage can teach others the learned skills (Reilly, 2012).

Each proficiency level is defined using behavior indicators or statements in order to identify higher levels of proficiency, which in turn include higher levels of competency (Mukherjee, 2011).

3. Behavior indicators

These, also referred to as behavior statements, are behaviors that employees producing superior results should reveal in performing a task. They are considered to offer a unified language, perception and expectation for employees within the organization. They communicate the desired behaviors and thinking needed at work (Vazirani, 2010).

2.6 Building a Core Competency Model

The following steps are taken in order to develop a competency model (Rothwell & Graber, 2010) :

1. Company profiling:

It is important for an employee to understand the organization's vision, mission, values, core business, competitors, strategic goals and objectives. Next, s/he should have an interview with the senior level management (at board level) in order to understand their perspective on the skills that are required for meeting the organization's strategic goals.

2. Position/job/role profiling

This step is made up of three stages: first, understanding the company's job chart/ organizational hierarchy, which includes all levels, each job's span of control and the reporting structure, in addition to understanding the job description and job profiles. Then each role should be analyzed from the standpoint of the knowledge, skills, values, motives, attitudes, habits and traits that it requires. Next comes preparing a list of the expected skills and knowledge for each job role. Third, Card Sort Method is used in interviews between employees holding a certain position and their direct supervisors. Each card shows the competency that was collected from the previous step. The job holder is asked to divide the cards into two sets. The first set is the competencies which are important to the job and the second is the competencies which are less important or not required. Then the interviewer goes through the cards and asks the job holder whether each of the competencies can be seen at work and showing superior performance. The interview ensures that the final list contains only the required competencies and not merely those that would be helpful to have.

3. Identification of performance indicators

In this step, first, performance appraisals of the employees for the last 3 years are collected in order to get an idea of the indicators of highly performing employees and what indicates poor performance. After understanding the indicators, the criteria for judging superior performance in a job role should be identified. The Subject Matter Experts and the HR team should go through this step in order to identify the performance criteria for each job/role in order to produce superior results. The last stage is to interview superior performers in the company in order to check whether they demonstrate or use these competencies outside the firm to attain superior performance.

4. Identifying the characteristics of superior performers by direct supervisors

For each role, the direct supervisor who is one level higher than the job holder should interview him/her. The purpose of the interview is find how the styles of high performance employees differ from those of low performance employees: i.e. what skills are required when choosing from a pool of candidates who possess a similar education, background and experience.

5. Compiling the collected data

In this step all the interview records and data collected from steps 1-4 are analyzed in order to learn what behavior indicators are required to attain superior results at work. To help produce superior results, only the most important behavior indicators (around 60-80) are kept.

6. Defining the competency clusters

The most experienced team studies the list prepared in step 5, ensuring that it contains no duplications and checking the language used. After the study, behavior indicators of a similar nature are combined in order to create different clusters of competencies.

7. Validating the model

The draft of the competency model is given to the Subject Matter Experts (SMEs), who are knowledgeable and experienced in what is required for a job/role. They review the behavior indicators and the clusters of competencies. It is always advisable to choose SMEs who are also superior performers and who have worked in the same role. The SMEs go through the content and provide feedback on deleting any behavior indicator. They also check the language and wording used. The revised model will entail 8-10 competencies, each having 4-6 behavior indicators.

2.7 Competency Model Design Check List

It is advisable to use a check list in producing a competency model in order to ensure the quality in the design; such a list will be as follows (Whiddett & Hollyforde, 2008):

- Easy and clear to understand

The language used in the model should be easy for the employees to understand and should reflect the language used throughout the company. The structure of the model should be logical and easy to follow.

- Relevant to the employees who will use it

Whether the model is designed as a generic or specific one, the language used in the framework should be relevant to every employee who will be using it. A generic model means one designed for all roles in the company or department. This model should be relevant to all the roles, which means that the competencies should describe in generic terms the required behaviors needed to perform the work at a superior level. Specifically, the employees who will use this model should be able to see the relevance of the behavior indicators to their roles and should be able to recognize that these indicators are relevant to the job and will help to produce superior results.

- Able to account for future changes

In order to account for future changes, models need to stay relevant to the job. To guarantee this, the designers of the model should:

  - always study the changes happening in the organization
  - consider the changes in the technologies in used
  - appreciate the vision of the organization and strategic decisions of the business

- Showing no overlap between competencies and behavior indicators (as discrete elements)

Competency models are used when conducting assessments of employees. The structure of the competency model will affect the ease and accuracy of such assessments. Hence, each competency should have discrete elements, otherwise the assessor will find it difficult to know what the requirements are for superior performance. Further guiding principles are listed below:

  - No competency in the model should depend on any other
  - No competency should be duplicated elsewhere in the model

- Behavior indicators should relate to one cluster and one level of competencies
- The type of evidence required from the employee should be clearly indicated next to each behavior indication, i.e. one observation or product
- Verb clauses should be included to describe what an employee is required to do
- Enough information should be included in the behavior statement for the employee to understand what is required from him/her.

If the above qualities are met then a competency model should be fair to all the employees who will be using it.

2.8 Competency Model Supporting Roles

Other process roles that support the success of competency models are those of the employee, the assessor, the manager/supervisor, and the verifier. Enacting these roles and undertaking the associated processes effectively will help and support the success of the program and the achievement of the company's objectives. The definitions of the process roles are as follows: (Leuro & Kruger, 2014)

- Employee: the main entity of the program, s/he is responsible for his own competency development and progress during the program.
- Assessor: s/he is responsible for assessing the competence of the employee. S/he is aware of the assessment process and considered one of the superior performers in the company. S/he is responsible for ensuring the accuracy of the assessment process, documentation and quality assurance.
- Manager/supervisor: should support the development of the employee and be responsible for his/her development by proposing a development plan (Rothwell & Graber, 2010; Shandler, 2000).
- Verifier: s/he is responsible for verifying the assessment process and improving its validity. In addition, s/he ensures the reliability of the assessors.

2.9 The Difference between Competency Models and Traditional Forms of Training

The main difference between traditional training and competency based training comes from the concept of the learning cycle. For example, a competency based program is based on measured clear outcome-based competences which reflect the expectations from the employee in a specific job role. In addition, as stated by Brunt (2007), competency programs are learner-centered; encourage self-directed learning (Dubois & Rothwell, 2004a, 2004b); have clear behavior indicators/competency statements for the competency clusters which focus on the outcomes; and are based on criterion-referenced evaluation/assessment methods. A criterion-reference is a standard of competency which is developed by the SMEs in the organization. In this type of assessment, the employee is assessed in competencies (performance expectations at work) based on outcome-based evidence (standards) (Fletcher, 2000). The assessment is usually in a binary manner, either "competent" or "not competent", but it does not compare the employee's performance to that of others (Cydis, 2014). Not knowing the difference between the two training models could result in confusion among trainers/coaches because they think that competency based programs are a system of training, rather than a system for assessing superior performance. They focus on the inputs or the processes instead of the outcomes. They believe erroneously that the method of designing competency based programs could change. They think that the role of the trainer/coach has no place in competency based programs (Fletcher, 1997).

While the learning of the program depends on the individual (self-learning), this does not mean that the role of the trainer/coach is diminished. It remains, but becomes more that of a facilitator/consultant. The trainer/coach can work with the employee's direct supervisor to identify the training needs and evaluate the program's effectiveness (Fletcher, 1997).

The table below compares a traditional training model with a competency-based model: (Brunt & Smith Papa, 2009)

Table 2: Comparison between traditional training and competency based model

Element of Comparison	Traditional Training Model (Trainer-centered)	Competency Based Model (Learner-centered)
Purpose	To cover content that may or may not be part of the job role	To cover specific tasks included in the job role
Structure	Learning objectives that are set by the trainer	Competency clusters that are set by the company along with behavior indicators.
Professional levels	Training courses can be delivered for beginners, intermediate and advanced learners.	Behavior indicators are divided into beginners', elementary, intermediate, advanced and expert. This helps when comparing employees in the different job roles.
Delivery	A course given by a trainer from within the company or outsourced in a classroom or online	A competency model given to the employee who works on it at his/her own pace in order to meet specific objectives
Support for learning	Instructor of the course provides support to trainees during the course period.	Employees receive support from the coach, and from other employees who have superior performance. Yet the responsibility for learning is on

		the trainee him/herself (self-learning/development).
Assessment	Only at the end of the course to ensure understanding	Regular assessment during the program period to ensure enhancement of performance
Requirements from the trainee	Course attendance	Competency portfolio and Individual Development Plan
Outcomes	Certificate of completion	Trade qualifications

2.10 Application of Competency Models Globally

A study conducted in the UK using data from 398 organizations has shown that competency based models are well known and that about 60% of the organizations surveyed were using competency models. Competency models cover different subjects, mainly team skills, communication and people management. More than half of the competency models used were developed within the company/in-house (CIPD, 2007). In another study conducted in China using data from 269 Chinese companies, it was found that about 77.8% were using, amending or creating competency models to develop their employees (Wu, Lin, & Jin, 2011).

In the USA, Community Health Workers (CHWs), who have a vital job, unfortunately could not be offered staff development because too little research had been done. Consequently, the New York University Prevention Research Center developed a pilot training program for a Community-Academic Initiative (CAI-CHW). The purposes of choosing competency based training were as follows (Ruiz et al., 2012):

- To recognize the Community Health Worker nationally
- To classify the CHW roles and responsibilities
- To meet the need emphasized by previous writers to develop such a program for CHWs

A competency model was applied to the existing CHW curriculum. The model focused on the following core competencies (Ruiz et al., 2012):

- Communication skills
- Interpersonal skills

- Capacity building skills
- Informal counseling
- Advocacy skills
- Technical skills
- Organizational skills
- CHW role and history
- Service coordination

The training was designed according to the principles of adult learning and an educational approach which encouraged the trainees' involvement and interaction with the trainer and with each other. The training was given in two stages. The first stage was mainly about gaining core competency skills. This session was given by the CHW Executive Director, with another experienced trainer. The second stage was mainly about the other necessary skills that CHWs need to acquire. The results of the study showed a 23% improvement in confidence among the 12 participants from the pre-training stage to the post-training stage. The confidence was noticed more in the area of core competencies, roles and tasks. A 35% improvement was noticed in the participants' confidence in understanding the stages of change. A 34% improvement was noticed in participants when it came to understanding the roles and responsibilities of CHWs and identifying and celebrating properly the customers' success. In summary, having a core competency program for CHW has resulted in the following (Ruiz et al., 2012):

- Building confidence in CHWs
- Equipping CHW with the required skills, which they intend to use when dealing with customers

- Giving CHWs practical experience of their role and of understanding the needs of customers.

One of the problems during the implementation of the program lay with the academic background of the participants. Some participants had an advanced academic background and felt no need to be part of the program. However, this issue was solved by the implementation of adult learning principles and an educational approach which encouraged the interaction and self- reflection of participants (Ruiz et al., 2012). This confirmed the link between competency models and adult learning theories indicated in the literature above.

In another study, conducted by Zhang et al. (2012) in China, the validity and reliability of a competency model for the International Public Management Association for Human Resources (IPMA-HR) were tested. The IPMA-HR model was created in 1997 as one of the tools that defined the HR competencies efficiently. This competency model consisted of 22 HR competencies and was divided into four roles: *Expert, Business Partner, Change Agent* and *Leader*. Each level or role had its own specific competencies and responsibilities as required when performing the job within the organization. Each of the four roles had its own work-related activities and they were all closely related to each other. More specifically, the *Business Partner* role consisted of 12 competencies, the *Change agent* role had 14, the *Leader* role had 8 and the *Expert's* role had 1. The main reasons for adopting the IPA-HR were to take the Human Resource management through a paradigm of change and development. It was believed that having such a program lets HR professionals acknowledge their important role in leading and managing the performance of the organization and of individuals. Eventually, if HR professionals understand their role and take responsibility, this will lead to increased productivity (Zhang, Zheng, Sun, & Zheng, 2012).

The results of the study showed that the 22 competencies in the IPMA-HR model can distinguish between employees with superior performance and employees with average performance. This is similar to the work done by McClelland, as mentioned above. In addition, it can distinguish HR professionals from non-professionals. Moreover, introducing the IPMA-HR program to HR professionals had a positive effect on their development. To ensure the success of the program, various investigations of the administration of Foreign Expert Affairs (TCSAFEA) were carried out by the state. Second, the program was designed to accommodate the Chinese culture, by, for example, creating bilingual training manuals and joining up different companies in order to build a team (Zhang et al., 2012).

A study by Hassan (2012) proposed three models of competency based training for health workers. Three competency based models were developed for the workers at medical institutes. Health workers had to show their ability in regard to six outcomes, namely, patient safety, patient centeredness, effectiveness, efficiency, timeliness and equity. In addition, health workers had to prevent or mitigate six other outcomes: death, disease, disability, discomfort, dissatisfaction and destitution (due to the cost of care). It was concluded that having such models would help to equip health workers with the necessary knowledge and skills. The models were created because the traditional ways of training could not develop the workers as required. The programs which were developed were competency-structured presentation models using the CanMeds framework: the CSP model, the BESD model and the 5S model. The three models went on to equip workers with seven domains of knowledge and skills, called meta-competencies,, i.e. as *medical experts, communicators, collaborators, scholars, advocates, managers* and *professionals.* The results of testing the above models showed only a small improvement in management decisions when it came to supportive and specific therapeutic inputs: these rose from 85.7% to 95.2%. There were major improvements in the management decisions in areas such as clinical diagnostics and etiologic diagnosis, which rose from 57.1% to 71.4%. The decision making when a severe condition was indicated showed a marked improvement from 0 to 57.1%. The site care decision making improved from 19% to 90.5% and finally the decision making for special referral improved from 8.3% to 100%. Using the three models helped to empower workers with the required knowledge of quality care (Hassan, 2012). This example can be referred back to the literature written on catalyzing organizational change because of the implementation of three competency models and also the need to demonstrate six competencies.

Luxottica Retail (a group of eyewear stores) of Mason, Ohio, a wholly owned subsidiary of the Luxottica Group in Milan, Italy, developed its competency-based program in 1995. The program was developed in order to have a unified list of competencies, which could be used for hiring, measuring performance and for training and development purposes. The aim was to train associates using these competencies so that eventually they would use them when doing their jobs. The program consisted of five different main areas of competency, namely, leadership, functional, foundational, diversity and innovation. Such competencies help managers to recruit the right candidate by using pre-hiring assessments. For instance, the pre-hiring assessment measures different competencies, such as customer service, sales, problem solving, leadership and verbal reasoning. The return on investment (ROI) for these competencies is calculated for sales associates and field managers. The ROI was calculated for one of the brands and dictates that an associate who scores high in the sales element of the test sells about the value of $13 more per hour than an associate who scores low. If 6000 to 8000 sales workers with such a competency were hired, this would result in increasing the profitability of the retailer (Spicer, 2009). This example gives a calculated benefit of using competency models as part of training and development.

Achievement motivation training for small businesses shows that competency can be taught and can lead to return on investment (ROI). In 10 cities of the United States, entrepreneurs went on an eight-day achievement motivation course (McClelland & Winter, 1971). The first five days of the session focused on different elements related to achievement-motivated thought, such as concerns relating to better performance and effectiveness; comparison of the attained scores with the standard; innovation; long-term brand development plans; statement of the goal of the business; estimation of losses and success; knowing their personal and external difficulties; initiative; and the use of help. Participants were also given case studies and examples of successful and unsuccessful entrepreneurs in order to show how the thinking led to such behaviors as (Spencer & Spencer, 1993):

- Setting goals that are challenging, with moderate risk
- Identifying opportunities
- Measuring the anticipated risks
- Being responsible for carrying out the tasks
- Using experts' feedback to improve performance

Participants took what they had learned in the session and applied it in real-life situations but they still got the needed feedback on their competency, i.e. on their expression quality and on economic outcomes such as sales and profits. A one-day session was held to follow up the participants' progress and to determine whether they had met the goals which they had set before the five day session (Spencer & Spencer, 1993).

The US Business Association wanted to calculate the cost-benefit ratio and return on investment in an achievement motivation course. $287,500 was invested in the course. To compare the trained entrepreneurs with an untrained group of entrepreneurs, the trained entrepreneurs were able to generate 227 additional jobs which produced income for employees of about $651,100. In addition, they generated around $615,000 in added business profits and $484,000 in added personal income. The government revenue for the first year was $362,300 and for the second year was $705,000 making a total of $1,067,300 for the two years. The government return on its investment appeared within 9.5 months. In the two years, the return on investment (ROI) was 271% altogether (Miron, 1979).

In a study conducted by Leuro and Kruger (2012) in one of the oil and gas companies which has implemented competency models for about ten years, a link was shown between employees' competence and the company's outcomes. The study looked at the correlation between the program's main metrics and the company's Key Performance Indicators (KPI). The program metrics consisted of:

- Competence of the employees: this is the ratio between the employees' documented competencies showing that they meet the required proficiency level and the total of competencies required from the employees or the business unit.

- Competence Inventory status: this is the ratio of the employees who have been assessed in a business unit to the total number of employees in the unit.

The KPIs are as follows (Leuro & Kruger, 2014):

- Service quality: this is the percentage of jobs within the business unit that has problems and the cost of poor quality per job
- Safety: this is the total incident rate recorded
- People: this is the willingness of employees to stay employed by their present firm (voluntary attrition)

The results show that the alignment of competencies with current work processes had led to a positive correlation between the competent workforce and service quality, which means a low percentage of jobs with problems. They also demonstrate a positive correlation between competent employees and safety, which means that the rate of incident rates was low. Finally, a close correlation was found between implementing the program and the attrition rate, which means that employees were staying in their jobs (Leuro & Kruger, 2012, 2014).

A study by Mahmood, Mushtaq, Hussain, and Khan (2014) of an oil company which successfully implemented a competency program examined the effect of a competency management system on employee job satisfaction. The methodology used to collect the data was a questionnaire answered by 50 technical staff who were assessed against the competency standards. The questionnaire consisted of 15 questions, 7 related to job satisfaction and 8 to competency management, which included the following:

- Were the assessors trained properly?
- What were the performance criteria and levels?

- What rewards would the employee get after the assessment?
- Was the program relevant to the employee's job?
- Were the assessment results clear to the employee?

The data analysis started with Cronbach's alpha, which showed with a value of 0.934 that the measures used were reliable. Then correlation analysis was used to check if the two constructs were related; it found a statistically significant relationship between job satisfaction and competency management. Finally, regression analysis was used to understand the relationship between the dependent variable (job satisfaction) and the independent variable (competency management). The results show a positive relationship between the two variables and the management of competency (which predicts the dependent variable, job satisfaction). The equation is as follows:

Job satisfaction = 1.797 + 0.569 (competency management)

The above means that strengthening the competency management processes raises the employees' job satisfaction. A one-unit change in the competency management processes/system will result in a 0.569 improvement in the workers' job satisfaction.

The implementation of competency models as part of training and development will have benefits as mentioned above, i.e. high return on investment, affect organization KPIs with regard to service quality, safety, and attrition of employees. Furthermore, it has an effect on employees' satisfaction with their jobs. All the mentioned benefits are the reason for wanting to study the factors that make the competency model effective in the perception of trainees.

2.11 Application of Competency Models from Oil Companies in the UAE

Competency models were introduced into oil companies in January 2002 (*Competence Assurance Management System (CAMS)*, 2009).The main reasons or objectives when applying a competency-based model in oil companies were that they ensured the following (*Competence Assurance Management System (CAMS)*, 2009):

- Work is performed by personnel who are competent.
- Employees are assessed against agreed competency standards for a specific job (and level in the job) and have in place a system for verification and assessment.
- Professionals are developed to a high level of competency in their chosen areas and maintain these levels through life-long learning.
- All business-critical activities are performed by people who can discharge their responsibilities effectively to meet the company's business objectives.
- All HSE-critical activities are performed by personnel who can discharge their responsibilities effectively with due regard to Health, Safety and the Environment (Shirazi & Soroor), as laid down in the company's HSE policy.
- Opportunities are provided for UAE Nationals in support of the Emiratisation policy.
- A motivated and qualified workforce, recognized and rewarded according to performance, is attracted and retained.
- Unified standards among UAE Nationals in all oil companies in case of transfer.

- Increased growth of businesses
- Employees are developed to replace those who retire
- Competent UAE nationals are provided, despite the limited market
- The number of large projects increases

The competency models in oil companies are mainly used for training and development. They are developed in two steps by the Competency Advisor and the Skill Pool Expert. First, the Competency Advisor prepares the model by reviewing the job description and discussing it with the line managers or the employees performing the job. Next, the Subject Pool Expert reviews the model, adding to and deleting from it as necessary. Then it is approved and registered in the mother company.

In oil companies, competency models are used for training and developing UAE employees who have recently graduated. The model is created for one level, the first entry job of each discipline.

The competency program is not a time based program but rather one which is competency based. The maximum duration of the program is two years.

The competency models, also called the Competency Assurance Management System Development Framework (CAMS DFW), provide a roadmap for graduates to become competent and independent in their work. The DFW consists of the following (*Competence Assurance Management System (CAMS)*, 2009):

1. Sections: Main areas of skills
   - Core competencies (core-discipline specific): specific competencies directly involved in the job

- Support competencies (support-related disciplines): other discipline competencies indirectly involved in the job
- General competencies (general-business in scope): the non-technical competencies required to perform the job
- Personal/Behavioral competencies: the personal behavioral competencies required to perform the job

2. Units: the main building blocks of the job profile
3. Performance criteria: a description of the performance aspects of each element in terms of the knowledge needed and the work done for each of the four levels of performance, namely:
   - Awareness
   - Knowledge
   - Skill
   - Mastery

4. Evidence Criteria: lists of the types, qualities and quantities of evidence needed to demonstrate that the minimum standards of knowledge and performance competence required for each performance criterion are met. The types of evidence are as follows:

- Observation (O): focusing on the quality of an activity (observable behavior). Observation evidence may be a direct observation by the assessor or may be a witness statement from a competent source
- Product (P): focusing on the quality of the end results of an activity (report, memo, advice)

- Question (Q): focusing on the quality of the underpinning knowledge. Questions focus on understanding why activities are carried out in a particular way and what is important for a good result.

5. Development activity type/Development type, which consists of:

- On-the-job training (OJT)
- Training courses

6. Assessments: the four levels of assessment

It should be pointed out that in oil companies, trainees cannot be assessed under a set of performance criteria before ensuring that they have completed all the previous performance criteria, i.e. trainees must not be assessed in elements at the Mastery level before meeting the awareness, the knowledge and the skill performance criteria of these elements in turn.

When UAE nationals join the company, they are provided (within one month) with the Development Framework plan (the competency model) related to their job. Trainees are then required to undergo a Baseline Assessment in order to be registered on the mother company's database.

The team involved in the UAE national development program consists of the following (Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,"):

1. Supervisor: S/he leads the team where the employee works and ensures that the employee meets the requirements of the program.
2. Mentor: S/he provides the trainee with guidance and support in areas of personal career development. Providing reality checks is part of the mentoring function.

3. Skill Pool Expert: S/he supports the trainees, as required, in areas of competency model development, assessment and verifications.
4. Assessor and Verifier: Because evidence-based assessment is used, the evidence of competence is collected by the employee and is compared with a standard; the assessor and verifier judge whether or not it meets the standards. To ensure accuracy, all assessors and verifiers should be trained and certified as assessors/verifiers. The verifier ensures that the assessment process was done correctly.
5. Coach: S/he helps trainees to grow and develop in the workplace by directing them as required. S/he encourages individuals to attain the desired outcome and to stay focused and motivated and also monitors their progress. It is worth mentioning that the coach can take the place of the supervisor, the SPE and the Assessor, if needed.
6. Competency advisor: S/he usually comes from the training and development department and his/her role is to ensure that the assessor and verifier following the agreed standards. In addition, s/he must ensure that the coach and mentor are following the trainees' progress.

The follow-up on the trainees' progress is mainly the work of the coach, mentor and competency advisor. A Personal Development Plan (PDP) is prepared for each employee with the support of the supervisor and the support team. Each PDP is linked to a DFW or competency model for each of the specific jobs of the employees. The PDP consists of a cover page, employee profile details, the planned practical tasks to be linked with the competencies in the model, the actual tasks, training courses, assessment summary and bi-annual review (with the signatures and comments of the trainee, team leader, coach and competency advisor). The PDP of each trainee is then sent to the mother company so that the trainee's progress can be followed. Every time the trainees undergo an assessment, the list of the elements completed is entered in the mother company's database and every month a report is generated to check the progress of the trainees. If the trainees lag behind in their progress, then a red flag is shown in their report. The competency advisor then highlights such reports to the line manager, the coach, the mentor and these trainees, in order to change their status by carrying out more elements and assessments. (*Competence Assurance Management System (CAMS)*, 2009).

In oil companies, assessments are carried out when the trainees are ready but they must not exceed 10% of the elements per assessment. For the assessment to be carried out, trainees should inform their coach and assessor in advance (*Competence Assurance Management System (CAMS)*, 2009). The trainees should keep in a log book or a portfolio all the evidence that they have used in completing the performance criteria. A copy of the portfolio should be given to the competency advisor.

The verification process in oil companies is carried out after the completion of each assessment. Each is verified in the presence of the coach, the mentor, the assessor, the competency advisor, the line manager and the verifier (*Competence Assurance Management System (CAMS)*, 2009). It should be highlighted that the assessment and verification carried out in oil companies are based on the British and Scottish National Vocational Qualification Standards (*Competence Assurance Management System (CAMS)*, 2009).

Some of the factors that ensure the successful implementation of competency models in the oil company are (Al Matroushi et al., 2008):

- The desire to create competency models with reasonable targets, appropriate training and clearly defined behavior indicators
- The commitment of the management to providing employees with the needed resources and ensure that the objectives of the program are communicated to the employees.
- The clarity of roles to those who support the program and implement the rewards
- Graduate responsibility: employees who undertake the program are responsible for their development and progress and must find convincing evidence that they are competent.
- An assessment system which is used to capture the completed competencies by the trainees; to help identify the status of each employee; and to ensure that the agreed objectives are met.

The above mentioned competency model will be studied further and will be the basis of our empirical model for evaluating the perceived effectiveness of competency framework.

2.12 Training effectiveness and Training Evaluation

This study will look at the factors that make competency model effective. For this reason, it is important to learn from previous studies which are the variables related to training effectiveness. The present study uses the variables related to training effectiveness and continues by using an evaluation model to discover the opinions of the participants. It is worth mentioning that there is a difference between the terms 'training effectiveness' and 'training evaluation'. Training effectiveness is a macro view of the outcomes of training. It is gaining the required knowledge, skills, information and attitudes that helps in improving the learner's performance and also the benefits resulting from the training (Goldstein & Ford, 2010; Noe, R. A., 2013) . It focuses on studying the whole system in order to understand why employees learned or failed to do so. However, training evaluation is a micro-view that focuses only on learning outcomes. Furthermore, training evaluation studies the benefits that employees got out of the training experience. The enhanced performance of employees and their volume of learning are ways to measure the benefits (Alvarez, Salas, & Garofano, 2004).

Training effectiveness studies the participants, training and company characteristics that affect the training process before, during and after the training, whereas training evaluation measures the success of the training or failure with regard to the training design, content, behavior changes and organization's return on investment. The method of evaluation depends on the model used (Alvarez et al., 2004). Training needs analysis is a tool used in order to understand the needs of the trainees before designing the training itself. It contributes to the effectiveness of traditional training (Salas & Cannon-Bowers, 2001). However, in our study, training needs analysis is not considered because the way in which the competency model is designed is based on the inputs of Subject Matter Experts and top management (Mukherjee, 2011). The program is designed on the basis of the competencies required to perform the work as a superior performer (Whiddett & Hollyforde, 2008). The competency model is designed even before the employee joins the company. It is not designed later on based on the trainee's preferences, as traditional training is. Hence, training needs analysis is not part of this study.

As mentioned above, three constructs are measured in training effectiveness. The first construct is participants' characteristics which looks at the factors that the trainee brings to the course, i.e. features of personality, attitude, abilities, age, gender, experience, and expectations. It also measures other constructs that may affect the trainee's characteristics by being part of the training i.e. self-efficacy, motivation and goal orientation. The other set of characteristics that are studied are the organization's characteristics: the company's learning environment, history, available policies, the selection process of the trainee and the way of notifying them of the training (Alvarez et al., 2004). The last construct is the training characteristics which measure the training components, i.e., the instructional style, method of practice and participants' feedback (Cannon-Bowers, Salas, Tannenbaum, & Mathieu, 1995; Tannenbaum, Cannon-Bowers, Salas, Mathieu, & Naval Training Systems Center Orlando, 1993).

Training effectiveness constructs are studied thorough the training evaluation models. There is a study by the employment agency that measures training effectiveness by looking at the relationship between self-efficacy, practice, humor, supervisor's support, peer support; this found that there is a relationship between these factors, changes in learners behavior and company training investment (Alvarez et al., 2004). Other models that measured training effectiveness focused mostly on the transfer performance construct. These models look at the relationship between learning as a whole (which consists of behavioral aspects, cognitive and attitude) and the transfer performance construct. In addition, these models take into account the three sets of characteristics and their relationship with learning and transfer performance (Alvarez et al., 2004). The first model to be discussed is that of Baldwin and Ford (1988), which discussed the direct relationship between *individual and company characteristics* and *learning and transfer performance.* In addition, these writers suggest an indirect relationship between individual, training and company characteristics with a transfer of performance through learning. Furthermore, they mention a relationship between individual characteristics and both training and company characteristics (Baldwin & Ford, 1988). The second model, which also measures training effectiveness, is by Holton and Baldwin (2000). This model is an extension of the model by Baldwin and Ford. These writers found other factors that affect learning and transfer performance, namely, ability, motivation, participant differences, previous experience with the transfer system, trainee and company intervention, i.e. training preparation, support, etc. Finally, the last construct is the content and design of the training (Holton & Baldwin, 2000). The third model is by Holton (1996); he also suggests that the three characteristics noted above affect learning and transfer performance. He also suggests that participant characteristics and motivation constructs affect training results. Holton's model consists of primary and secondary factors that affect training effectiveness. The primary factors are the ability of the participant in training to use the learning, the motivation to use what is learned at work, the support of the working environment for using the learning (i.e. peer support, supervisor support and readiness for change). The secondary factors of the model consist of the trainee characteristics (i.e. self-efficacy) that would affect the transfer of learning through motivation. The measured outcomes of the model are learning during the training, and enhancement in performance for both the employee and the organization. All these constructs have an effect on learning and transfer performance (Holton, 1996; Holton III, 2003; Holton III, Bates, & Ruona, 2000). The final model by Tannenbaum et al. (1993) suggests a direct relationship between participant and training characteristics with cognitive learning and transfer performance. Furthermore, participant and company characteristics are directly related to transfer performance. In addition, the model highlights the interactions between the three sets of characteristics. This is similar to what is indicated by Baldwin and Ford (1988) and Holton (1996). Finally, there is an effect on the participant's motivation from the three characteristics above and in addition the motivation of trainees has an effect on cognitive learning and transfer of performance (Baldwin & Ford, 1988; Holton, 1996; Tannenbaum et al., 1993).

Training evaluation models study the success of the training (Alvarez et al., 2004). The first model to discuss is Kirkpatrick's model which consists of four levels: reaction, learning, behavior and results. This is one of the most popular models for evaluation. Reaction to training is related to learning while learning is related to behavior, which is usually measured during the training. The learning level refers back to the participant's attitudes, cognitive learning and behavior. The behavior level is related to the results of the training and refers to the performance of the participant at work. The behavior level is usually measured after the training (Kirkpatrick & Kirkpatrick, 2006). The second model that is used to evaluate training is by Tannenbaum et al. (1993). The authors added the post training attitudes of the participant to the model and divided the behavior level to two outcomes – training performance and transfer performance. In this model the reaction of the trainees to the training and the post training attitude is not related to any other outcomes of evaluation. However, learning is linked to training performance, which in turn is related to transfer performance. Transfer performance itself has an effect on results. The third model for evaluation is by Holton (1996). This model consists of the three outcomes of learning, transfer and results. The reaction of trainees is not measured in this model as a primary outcome. Reaction is used as a mediating or moderating construct between participant's motivation to learn and actual learning. Learning is related to transfer and the transfer construct is related to results. Holton combined training effectiveness constructs with evaluation. The author suggested a model with training effectiveness variables that are important in measuring the training outcomes. The final evaluation model that is looked at is that by Kraiger (2002), who looked at three outcomes: training content and design (i.e. delivery of training, design and validity). The other outcome is changes in learners, i.e. cognitive learning and behavior. The last outcome is the organization construct (i.e. the climate of the training transfer, enhanced performance, results). In this model, reaction is considered a measurement tool to understand the effect of training content and design on the tasks learned by the participants. The reaction construct is not related to the changes in the learners' or organization's construct. However, changes in learners are related to the organizational results.

Understanding the different constructs that are used to study training effectiveness and the models used to evaluate traditional training helps to create the model that is used to measure the perceived effectiveness of the competency model.

2.12.1 Trainees' Characteristics

Starting from the participants' characteristics, which is the first set of characteristics in training effectiveness, certain factors are found to be important: cognitive ability, motivation and self-efficacy (Baldwin & Ford, 1988; Holton, 1996).

2.12.1.1 Cognitive Ability

Cognitive ability is defined as the concepts, ideas and conclusions of the human mental process/ learners' intelligence that is used to learn, understand and come up with solutions to the issues faced (Grossman & Salas, 2011; Hale, 2011; Hattie, 2012). It is indicated that cognitive ability has an effect during the training but the transfer of training does not depend on it alone. The two types of the transfer of training are near transfer and far transfer. Near transfer is the applying of what is learned from the training program to situations that always match the original training event. This type of transfer is usually redundant and happens in the same sequence or the following steps. The training is easily conducted, but the trainees will have difficulty applying what is learned in real life scenarios. Far transfer is applying what is learned in real life scenarios that are different than the original training scenarios/event. It requires learning scenarios where the trainee gains the needed skills and knowledge and is able to apply them in different/changing situations. This type of transfer is hard because the trainee does not gain only the needed skills and knowledge but also must know how to apply them to different situations in real life (Blume, Ford, Baldwin, & Huang, 2010). It was supported in educational research findings that only learners with high cognitive ability scores can undertake far training (Clark & Voogel, 1985). In addition, in another study by Grossman and Salas (2011), it is indicated that trainees with high cognitive ability are expected to be successful in gaining, using and retaining their training skills. It was also found that cognitive ability is correlated to transfer of training, which indicates that intelligence is a major factor in applying what is taught in training programs (Blume et al., 2010; Colquitt, LePine, & Noe, 2000a). When trainees attend a training program their cognitive ability affects their performance outcomes in the program (Grossman & Salas, 2011).

2.12.1.2 Motivation

In a study by Colquitt et al. (2000a), it was found that training motivation is affected by a set of trainees' characteristics, i.e. cognitive ability, self-efficacy and situational characteristics, the whole work environment. Training motivation is defined as the learner's desire to understand and learn the training program content and then apply the learned skills and knowledge in the job (Noe, 1986). Training motivation in some studies in the literature review is considered one of the vital factors that affect training effectiveness based on the trainees' reaction to the program, (e.g. (Baldwin, Magjuka, & Loher, 1991; Bell & Ford, 2007; Cannon-Bowers et al., 1995; Kontoghiorghes, 2004; Mathieu, Tannenbaum, & Salas, 1992). In addition, it is found that performance in learning is higher for motivated attendees than for unmotivated ones. Motivation to learn has an effect on the reaction to the training program, trainees' behavioral intentions and self efficacy (Bell & Ford, 2007).

Enhancing trainees' motivation is the goal of human resources specialists although three factors affect training effectiveness; these are trainee characteristics, training design and organizational characteristics. It is found that constructs of trainees' characteristics are beyond the control of the human resources specialists and organizations tend to send their employees for courses in order to improve these characteristics. Finally, organizational factors consist of employees' needs, culture and systems which also not in the control of human resource specialist. This is why the effect of constructs of training design or training program characteristics is looked at when studying the effect on training motivation. This construct can be controlled or modified by picking the right training program characteristics in order to affect trainees' motivation e.g. (Bell & Ford, 2007; Clark, Dobbins, & Ladd, 1993; Klein, Noe, & Wang, 2006; Nease, 2000; Seyler, Holton III, Bates, Burnett, & Carvalho, 1998; Tai, 2006).

The types of training motivation include pre-training motivation (Baldwin et al., 1991; Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995; Hansen, 2001), motivation to learn e.g. (Bell & Ford, 2007; Klein et al., 2006; Nease, 2000), and motivation to transfer e.g. (Gegenfurtner, Veermans, Festner, & Gruber, 2009; Nikandrou, Brinia, & Bereri, 2009; Seyler et al., 1998). Pre-training motivation is the trainees' highest desire to acquire a new skill or knowledge (Machin & Fogarty, 2004). Motivation to learn is the trainees' desire to learn the content of the training program (Noe, 1986) whereas motivation to transfer is defined as the trainee's desire to use the learned skills and knowledge from the training program on the job (Noe, 1986). These motivation types have an effect on training effectiveness. For example, if pre-training motivation is high in the trainees, it means that they are willing to participate in the training program. This will result in higher learning outcomes than result for trainees with low pre-training motivation (Baldwin et al., 1991). As indicated by Cannon-Bowers et al. (1995), if trainees do not have pre-training motivation they will not be interested in attending the training course and will leave in the middle of the program. This verdict is supported by Hansen (2001), who found that pre-training motivation contribute to 58 % of the variance in the perceived training transfer by trainees. . In addition, training motivation has an effect on the transfer of training (Chiaburu & Tekleab, 2005; Kontoghiorghes, 2004). The second type of motivation is motivation to learn, which has an effect on training effectiveness. In a study by Colquitt et al. (2000a), it was found that in the model of the integrative theory of training motivation, the latter (motivation to learn) is a mediator between the factors related to training and training effectiveness.

According to the comprehensive model of training effectiveness, training motivation has an effect on the relationship between training characteristics (i.e. the program methods used, program content, trainers and principles) and training effectiveness. The training characteristics that affect training motivation are giving the trainees the option to participate in the program or not, the reputation of the training program, the design of the program, the relevance of the content to the trainees' needs, the relevance of the training content to the trainees' job and the relevance of the content to the trainees' career needs. Giving trainees the option whether to attend the training or not helps in increasing the pre-training motivation and post-training motivation. As supported by Baldwin et al. (1991), in trainees who are willing to be part of a program whether it is mandatory or not, the training motivation will increase and consequently the learning performance; the same is indicated in the research by Nikandrou et al. (2009). The term 'reputation of the training' means the reaction of trainees to the good quality of the program, the provider, and training value (Al-Ammar, 1994; Cheng & Ho, 1998; Facteau et al., 1995; Gegenfurtner et al., 2009; Naquin & Holton, 2002; Nease, 2000; Rowold, 2007; Seyler et al., 1998). In addition, the reputation of the training program affects the motivation to transfer the training to the job and could affect the training motivation before and after the completion of the training program that is referred to as the training framing (Tai, 2006). The design of the program also contributes to having a high motivation to learn. Program design characteristics are defined as the learning environment characteristics (Noe, 2013). Example of the training design characteristics that affect training motivation are rewards. As found by Whitehill and McDonald (1993), a variable payoff will help more in increasing trainee performance than a fixed payoff. The second factor is program methods (i.e. whether the program is learner-centered). It is found by Tai (2006) that being familiar with the training program will increase the pre-training and post training motivation. In addition, it is supported by (Gegenfurtner et al., 2009) that trainees' satisfaction with the program materials/instruments will increase the trainees' motivation to transfer. The third factor, that of distributive justice is defined as the fairness in the treatment of all the trainees in the training environment with regard to the rules, information, trainees' feelings and ethical standards (Quinones, 1997). Finally, it was found that trainees in a blended learning environment will be more motivated than trainees in a traditional class setup (Klein et al., 2006). The relevance of the training to the job needs means that the training outputs are relevant to the job requirements of the trainee (Clark et al., 1993). The degree to which the training program will be used in the job and will help to increase performance (job utility), is one of the important factors that affect training motivation and the transfer of training (Nikandrou et al., 2009). This is why, for training to increase motivation, it has to be relevant to the trainees' job needs.

The other factor that affects training motivation is the relevance of the training to the trainees' career needs. This means that a training program that fulfils and can be used as part of the trainees' career development plan will help in increasing the trainee's pre-training motivation. Noe (1986), thus indicating that the final factor is the relevance of the training to the trainees' personal needs. This factor can be categorized into three expectations from the trainees. First are the expectations of the trainee after attending the training (i.e. salary adjustment, grade promotion or recognition). Second are the expectations from being part of the training program which will help in increasing the employees' skills, knowledge. Third are the expectations of performing well in the training program and thus approaching the targeted outputs. This will then affect the trainees' motivation to learn (i.e. training program utility and trainees' perceptions of the training) (Tsai & Tai, 2003). These expectations explain the two kinds of factor affecting trainees' motivation: intrinsic and extrinsic factors (Rouiller & Goldstein, 1993; Santos & Stuart, 2003; Tracey, Tannenbaum, & Kavanagh, 1995). Intrinsic motivation factors refers to those behaviors that are associated with the trainees' internal satisfaction from pursuing the activity/training that leads to the reward. It is not based on the reward itself (Lens, Deci, & Vansteenkiste, 2006). Extrinsic motivation factors are based on rewards. They are not related to participating in an activity/training (Burke & Hutchins, 2007). When a trainee works hard to get a good grade in order to get a reward, i.e. recognition or promotion, and not to gain the required skills or knowledge, his/her motivation is called extrinsic (Shia, 2005).

One of the first managerial performance models developed by Porter and Lawler (1968) centered on trainability. Trainability is defined as the combination of ability, motivation and the trainees' reaction to the work environment. The element of cognitive ability helps in knowing if the trainees will understand the content of the program and be able to master the skills on offer. However, even if the trainee has the skills needed to acquire the prerequisite skill for learning the content of the program, the trainees' performance will be low if they are not motivated to learn (Maier, 1973). A training motivation is like the energizing force that encourages the trainees to be enthusiastic about the program. In a study by (Wen & Lin, 2014b), it was found that motivation to learn and motivation to transfer are mediators for the relationship between self-efficacy and training transfer. Without motivation, it is difficult to affect the transfer of training.

2.12.1.3 Self-efficacy

Self-efficacy is one of the factors that affect training effectiveness; it is one of the important constructs that determine program outcomes/results (Haccoun & Saks, 1998) and it is positively correlated with learning, behavior and improved performance (Axtell, Maitlis, & Yearta, 1997; Cheng, 2000; Chuang, Liao, & Tai, 2005; Gist, Stevens, & Bavetta, 1991; Guerrero & Sire, 2001; Martocchio & Webster, 1992; Quinones, 1995; Salas & Cannon-Bowers, 2001). Self-efficacy is the perception of personnel of their abilities/capabilities to attain the desired results, and organize and execute a range of work tasks/activities/performance levels. Self-efficacy is not related to the skills one has, but to individual belief regarding one's ability/competence to do the needed work at the required level of performance (Bandura, 1995). Self-efficacy is a great predictor of performance (Cole & Latham, 1997; Eden & Aviram, 1993). It is found that self-efficacy can predict performance for low complexity jobs but not for medium to high complexity jobs (Judge, Jackson, Shaw, Scott, & Rich, 2007). It correlates positively with post-training performance (Gist, 1989; Saks, 1995). As indicated by Switzer, Nagy, and Mullins (2005), trainees with high self-efficacy are efficient during the training, can understand the usefulness of the program and have a positive reaction with regard to changing their behavior in the workplace. Individuals must develop self-efficacy alone and tt cannot be enforced by anyone else (Hudson, 1999). Individuals with high self-efficacy set challenging goals for themselves and they cope with difficult situations/tasks, unlike individuals with low self-efficacy. Individuals with low self-efficacy avoid exposure to new challenges, which limits the benefit they might derive from training opportunities (Bandura, 1995; Hill, Smith, & Mann, 1987). Self-efficacy has a positive effect on training transfer and is a predictor of transfer of training on-the-job (Colquitt et al., 2000a; Taylor, Russ-Eft, & Chan, 2005). In addition, self-efficacy affects training effectiveness, motivation to learn, transfer outcomes, the reaction of trainees and improvements in performance (Chen, Sok, & Sok, 2007; Tharanganie, 2013). It is suggested by Saks and Haccoun (2013) that an effective training program is one that helps in increasing the trainees' self-efficacy. It is indicated by Merriam and Leahy (2005) that the transfer of training is higher by trainees with high self-efficacy because they believe that they have the ability to apply the material learned kin the training program at work. In addition, high levels of self-efficacy mediate success in goal setting and changes in behavior (Grossman & Salas, 2011; Matara, 2011). The reason for high self-efficacy in trainees is linked to pre-training motivation which results from participating in the training program Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991). Trainees with high self-efficacy successfully transfer training by setting effective goals, showing motivation to learn and changing their behavior according to the goals of the training program (Chiaburu & Marinova, 2005; Dweck, 1986). For this reason, it is indicated by Colquitt et al. (2000a), that self-efficacy is a consequence of the motivation to learn. Without motivation, training transfer may not be successful even if trainees have high self-efficacy. Thus, it is recommended that organizations improve trainees' motivation by investing in intangible intrinsic rewards (Porter & Lawler, 1968), extrinsic rewards (Noe, 1986) and defined goal settings (Wexley & Nemeroff, 1975). Focusing on the rewards and goals settings will enhance trainees' self-efficacy and will increase motivation to learn and motivation to transfer (Wen & Lin, 2014a).

There are two types of self-efficacy, which are pre-training self-efficacy and post-training self-efficacy. Pre-training self-efficacy refers to the trainees' confidence in their ability to learn the content/material of the training program (Tharanganie, 2013). Post-training self-efficacy refers to the trainees' confidence in applying what was learned to the workplace after the training (Thayer & Teachout, 1995). As found by (Blume et al., 2010), transfer of training was similar for both pre-training self-efficacy and post-training self-efficacy when examining studies that were not biased by same measurement context. In addition, pre-training self-efficacy has a positive relationship with the trainees' mastery of training (Harrison, Kelly, & Hochwarter, 1997; Holladay & Quinones, 2003; Mathieu, Martineau, & Tannenbaum, 1993). Cognitive ability is the other factor that could influence a trainee's self-efficacy, whether this self-efficacy is shown before or during the training program (Salvendy, 2012). There is a close relationship between self-efficacy and training transfer design. This means that if the training is designed in a way that matches the trainees' job requirements and gives them the chance to apply what they learned on the job, then this will increase the trainee's self-efficacy/confidence and they will be able to apply the new skills and knowledge in their daily work tasks. Training transfer design will have an indirect positive effect (through self-efficacy and post-training behavior) on the level of the application by trainees of the on-the-job training content. This means that if the training program is designed in such a way as to improve the level of skills and knowledge (training content/material) that the trainees use on the job, then trainees will be more likely to use the acquired knowledge and skills (training content/material) while performing their job. Self-efficacy has the strongest indirect effect on training results, which indicates that the more the trainee is able to implement the training content on the job, the quicker s/he will change his/her behavior and apply what he/she learned on the job. This will result in higher job performance (Diamantidis & Chatzoglou, 2014).

2.12.2 Training Design

The second set of constructs that affect training effectiveness are related to training design (Alvarez et al., 2004). Training design is defined as the content of the training program and learning principles that considers the objectives, the structure of the content and the material used in the training programs (Munna & Suring, 2011). Improper training design could result in the ineffective transfer of training, as trainees would not have gained the appropriate knowledge and skill (Holton, 1996; Yasin et al., 2013).Therefore, training design has an effect on the transfer of learning and trainees' motivation (Aziz & Ahmad, 2011; Blume et al., 2010; Burke & Hutchins, 2007; Hutchins, 2009). Companies are recommended to design programs that match or relate to the trainees' job with practical exercises that resemble the work outside the learning situation, and have a similar environment. This will help to improve the transfer of the learning/training content by the trainees (Rodríguez & Gregory, 2005; Yasin et al., 2013). The purposes of planning the right training program are to improve the employees' performance and retain them in the company (Yasin et al., 2013). Training content can increase pre-training and post training motivation when the trainee is aware of the program content (Tai, 2006). When trainees are satisfied with the training material/instrument then their motivation for training transfer will increase (Gegenfurtner et al., 2009). Hence, in order to stimulate motivation a training program, it needs to be relevant to the trainees' job tasks (Gegenfurtner et al., 2009). Different criteria in training design help in stimulating trainees' motivation; these criteria may be rewards, equal treatment, a match between the training content and work tasks and training methods. The training methods consist of learner-centered training, open-ended training, short-answer learning, and blended learning (Aziz & Ahmad, 2011). Another factor that is considered in training design is the sequencing of the training material (Baldwin & Ford, 1988). In a study by (Burke & Hutchins, 2007), six factors of training design are used to study the transfer of training: identification of trainees' learning needs, training goals, the relevance of training content, prominent instructional strategies and methods, self-managing strategies and instructional media. These are all factors relevant to the transfer of learning. Another model proposed by (Holton, Bates, & Ruona, 2000) is the transfer system inventory. In this model, perceived content validity is a measure used for assessing the design of the training. It has been suggested that if the trainees perceive the content as similar to their real work tasks, then they increase the transfer of training. Other researchers have also used perceived content validity and it has been suggested that it has an effect on the transfer of learning (Bates, Holton III, & Hatala, 2012; Devos, Dumay, Bonami, Bates, & Holton, 2007; Tai, 2006; Velada, Caetano, Michel, Lyons, & Kavanagh, 2007). Training content validity is defined as the extent to which the training content reflects the goals and objectives of the training program through the evaluation of trainees (Holton et al., 2000). Various training design constructs affect the transfer of training i.e. instructional techniques and principles of learning (Alvarez et al., 2004). Matching the instructions of the training program to the real work requirements helps in transferring the learning successfully to the work place (Holton & Baldwin, 2000).

It was found by Holton (1996) that training programs should be linked to the company's goals to gain results. Other factors that have an effect are self-directed learning, goal settings and approaches to retaining the new knowledge (Tziner, Haccoun, & Kadish, 1991). For this reason, companies need to design their training programs by considering such factors as contribute to increasing the training transfer (Dirani, 2012). As a result, training will be transferred when the trainees know how they can apply the new learning at work (Dirani, 2012). In a study by Renta-Davids, Jiménez-González, Fandos-Garrido, and González-Soto (2014), it was found that two constructs are related to training design: training efficiency and training relevance. It was found that these two variables are positively related to each other and also that both are related positively to the transfer of training. This is similar to what previous studies have found, e.g.(Holton et al., 2000), which included training design and content validity in the learning system of the transfer inventory (LTSI). Training relevance is a full mediator between learning-oriented motivation and complexity in the transfer. This means that the trainees who show high levels of learning-oriented motivation tend to perceive the training program as more related to their job tasks, career development and perceive a higher level of transfer. Trainees who take part in complex tasks in their jobs tend to perceive the training program to be related to their job activities. The reason may be that trainees who do complex tasks, i.e. planning, decision making and using special IT software which requires special training are motivated by the fact that they are gaining the needed knowledge and skills that will help them at work (Bates et al., 2012). Training programs may be excellent in design and delivered in the right way but without an environment that supports the learned tasks the training program will be of no value to the trainees (Grossman & Salas, 2011). In addition, employers and employees should align the learning goals with organizational objectives in order to have a positive effect on company's culture/climate (Niazi, 2011).

2.12.3 Work Environment

The third set of characteristics that have an effect on or enhance training effectiveness are related to the work environment (Alvarez et al., 2004; Homklin, Takahashi, & Techakanont, 2013). The work environment affects the transfer of training and the trainees' decision to implement what they have learned in the training program (Baldwin & Ford, 1988; Tracey & Tews, 2005). The work environment consists of three variables, i.e. company culture/transfer climate, supervisor support and peer support, which are referred to as 'social support' (Baldwin & Ford, 1988; Tracey et al., 1995).

2.12.3.1 Company Culture/Transfer climate

Company culture/ climate is defined as the extent to which companies create a supportive environment that facilitates or hinders the transfer of training content/material from the classroom to the job (Noe & Schmitt, 1986; Salas & Cannon-Bowers, 2001). A supportive transfer culture/climate has a positive effect on the transfer of training and an unsupportive climate may have a negative impact on applying new learning (Colquitt et al., 2000a). Company culture/perception of the transfer climate impacts on the transfer of training and is related to post-training behavior (Blume et al., 2010; Hauer et al., 2012; Martin, 2010; Rouiller & Goldstein, 1993). Studies show that a learning culture/climate is highly correlated with social support and performance feedback (Baldwin & Ford, 1988; Holton III et al., 2000; Tracey & Tews, 2005). Studies have linked a company's culture/climate to the transfer of training (Machin & Fogarty, 2004). Employees are willing to implement their new knowledge and skills in their jobs when the company's culture facilitates the transfer of training (Baldwin & Ford, 1988; Grossman & Salas, 2011; Marsick & Watkins, 2003).

2.12.3.2 Social Support

Social support, that is, the support from supervisor and peers is defined as the extent to which supervisors and peers reinforce the use of the newly learned knowledge and skills on the job (Holton et al., 2000). Studies show that when trainees perceive that their supervisors and peers are supportive of their implementation of newly acquired knowledge and skills then they are more likely to transfer these competencies back to their jobs and to change their behavior on the job after the training (Bates, 2003; Colquitt, LePine, & Noe, 2000b; Homklin et al., 2013; Tracey & Tews, 2005). In addition, when trainees have support from their supervisors, they feel that the training is of value and will benefit them while performing their job in a more effective way and be rewarded. This is why previous research has indicated that a supervisor's support has a positive relationship with the transfer of training and is one of the strongest predictors of transfer (Blume et al., 2010; Cohen, 1990; Gilpin-Jackson & Bushe, 2007; Kontoghiorghes, 2001; Saks & Belcourt, 2006; Salas & Stagl, 2009). Furthermore, supervisors' support could contribute to the creation of a supportive work climate by setting goals, giving positive feedback, coaching, encouraging and providing employees with the chance to transfer/practice the newly learned skills and knowledge on the job (Birdi, Allan, & Warr, 1997; Burke & Hutchins, 2007; Locke & Latham, 2002; Nijman, Nijhof, Wognum, & Veldkamp, 2006; Russ-Eft, 2002). It was found by Mathieu et al. (1992) that feedback and coaching performed by supervisors can be a predictor of the transfer of training. Supervisors can help by removing the problems/obstacles that employees may have during the implementation. If supervisors do not consider the training program to be useful or important then this could hinder the employees in making the transfer (Lim & Morris, 2006; Martin, 2010). This may result from the lack of feedback from the supervisors regarding the value of the training content or lack of encouragement to use the new learning, which discourages the trainees from making the transfer (Baldwin & Ford, 1988; Holton, Bates, Seyler, & Carvalho, 1997). Supervisors can also affect the transfer if they keep on postponing a chance for a trainee to attend a training program or put other work before doing so. Employees who transfer the most skills are the ones who had a supervisor who, before the training began, discussed with them the importance of the training and also after the training discussed how it could be used (Huczynski & Lewis, 1980). The elements that prevent the employee from using the newly learned skills and knowledge in the workplace are called *situational constraints* (Green & Skinner, 2005). These constraints can affect the employees' performance directly or indirectly by affecting self-efficacy, the employees' motivation and their training transfer (Kia & Ismail, 2013). Peer support, too, is one of the factors in social support that predicts the chance of transferring the training more than the trainee's actual learning outcomes do at the end of the training program (Quinones, Ford, Sego, & Smith, 1995; Rouiller & Goldstein, 1993). Peer support is recommended in order to increase transfer of training (Van den Bossche, Segers, & Jansen, 2010).

Previous studies indicate the relationship between the characteristics of the environment the trainees. For example, in a study by Tharanganie (2013), it was found that a supervisor's support is not a strong predictor of pre-training self-efficacy. This finding is similar to those in other studies that indicate that supervisor support is positively but moderately related to the employees' self-efficacy (Chiaburu, Van Dam, & Hutchins, 2010;

Tracey, Hinkin, Tannenbaum, & Mathieu, 2001). Furthermore, it was found that there is no relationship between supervisory support and motivation to learn (Tharanganie, 2013). This is unlike what is found in other empirical studies by Al-Eisa, Furayyan, and Alhemoud (2009) Chiaburu and Marinova (2005) Chiaburu et al. (2010). Some studies have found that supervisors' support has no considerable effect on the motivation to learn (Ismail, Mohamed, & Sulaiman, 2010). In addition, supervisors' support has no relationship with the motivation to transfer (Liebermann & Hoffmann, 2008; Seyler et al., 1998; Tharanganie, 2013; Velada et al., 2007). It is mentioned in previous research that peer support is significant in predicting and has an effect on the motivation to transfer compared to supervisors' support (Bates, Kauffeld, & Holton III, 2007; Kirwan & Birchall, 2006; Seyler et al., 1998). Yet peer support does not have an effect on pre-training motivation (Bates et al., 2007). It is indicated that supervisor support when measured with regard to the related tolerance of change is positively related to pre-training motivation (Facteau et al., 1995). But when support is measured with regard to supervisors' interest in training and support for transfer then no considerable effect is found on motivation to transfer (Liebermann & Hoffmann, 2008). In a study by (Velada et al., 2007), supervisors' support was measured with regard to "ways of applying the training on the job", "issues in utilizing the training", "feedback on performance" and "objectives to implement training on the job" and was found to influence the motivation to transfer.

2.13 Training Evaluation

Training effectiveness is studied by means of training evaluation models. Evaluating a training program is important for explaining why one and not another should be chosen and for showing how it contributes to the company's objectives. It also helps in deciding whether or not such a program is important and whether to improve the company's training programs as a whole (Falletta, 1998; Kirkpatrick & Kirkpatrick, 2006). According to Phillips (1996), training evaluation can help managers to decide whether a training program is meeting its goals, to identify its strengths and weaknesses for the purpose of future modification, calculate its cost-benefit ratio and establish a database so that top management can make training decisions. Training evaluation is defined as a collection of items of descriptive information which is important for taking effective decisions about the selection, implementation and changes required regarding the instructional activities of a training program (Warner & DeSimone, 2006). Training evaluation requires the systematic collection of information related to a predefined plan, to make sure that the information is suitable (Merwin, 1992). Training evaluation also helps to assess the learning outcomes of training programs (King, King, & Rothwell, 2001) It gives a micro view of the training outputs (Alvarez et al., 2004). There are no other options for guaranteeing the worth of investing in a training program than carrying out a training evaluation. It may seem a challenging process but it is useful for improving training programs and raising standards, which will lead to more effective programs (Maimunah, 1997). It is valuable to include training evaluation as the part of the training process that assesses its effectiveness (Kirkpatrick, 1998). There are several different models for evaluating the effectiveness of training programs (see Appendix I).

2.14 Evaluating the Effectiveness of Competency Based Models

The evaluation models used to measure the effectiveness of traditional training and development programs (see Appendix I) need to be modified to make them suitable for evaluating a competency based model (Dubois & Rothwell, 2004a, 2004b). For this reason, the model that will be modified and used to study the factors that make competency models effective is Kirkpatrick's four levels (Kirkpatrick & Kirkpatrick, 2006). Kirkpatrick's model consists of the following (Kirkpatrick, 1996; Kirkpatrick & Kirkpatrick, 2006):

- Level 1: Reaction:

This is a measure of the participants' satisfaction. In this level the participants' feelings are measured with regard to the different training components, i.e. the trainer, the topic, the period of the program, etc. Measuring reaction is valuable because top management can make decisions about training programs partly on the basis of the feedback from participants. In addition, measuring reaction helps to learn whether the participants are motivated to learn or not. If they dislike the training program on offer, they will not be interested in learning from it.

- Level 2: Learning

This is a measure of the knowledge gained, the skills enhanced and the attitudes changed because of the training program. Usually, a training program affects one or more of these three; knowledge, skills and attitude.

- Level 3: Behavior

This is a measure of the extent to which participants' on-the-job behavior changes because of attending the training program. This level is known as the transfer of training.

- Level 4: Results

This is a measure of the final output that occurs because of the training. For example, such outputs could be increased sales, higher profits, less cost, less employee turnover, increased productivity and better quality.

Of the four levels, only the first is used to study the factors that contribute to the effectiveness of competency based models in an oil company. The reason for choosing the first level is that, while each level is important, they all affect the following level; hence a study which measures the reaction of trainees in oil companies at the first stage can use the results of this measurement for research related to two further levels (2 and 3) (Kirkpatrick & Kirkpatrick, 2006).

When an organization moves from one level to the next in Kirkpatrick's model, it consumes much time, finance and effort, but it help the organization by the extra information that it supplies (Kirkpatrick & Kirkpatrick, 2006). This may explain why organizations do not go beyond Kirkpatrick's level 1 (Plant & Ryan, 1993). Organizations commonly evaluate at the level of participants' reaction. As highlighted by the American Society for Training and Development, 75% of 276 organizations in US use this reaction level for evaluating their training programs (Sugrue, 2003).

The participants' satisfaction/ with regard to training is usually measured at the end of the program and is considered an important form of evaluation regularly conducted by many companies (Arthur, Bennett, Edens, & Bell, 2003; Swanson & Sleezer, 1987).

However, there is a gap in the literature when it comes to analyzing the participants' satisfaction with regard to training (Arthur et al., 2003). The aim of researchers is to evaluate the results of the training, i.e. the benefits generated for the company as a result of training, which is hard to do and ignores other important aspects. The fact is that focusing on the satisfaction of trainees helps to identify the factors that affect the planning, creation and organization of the training program. In addition, it contributes to identifying the elements of the training program's success and effectiveness. For this reason, understanding the factors that contribute to trainees' satisfaction with regard to training is important for companies because it helps to enhance the training program and have a better ROI (Giangreco, Sebastiano, & Peccei, 2009). Measuring reactions helps to understand the overall satisfaction of participants with the training they have received and to understand the factors that affected their experience. As mentioned by (Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997), participants' reaction of satisfaction can be viewed as a global attitudinal construct that reflects the participants' general attitude to the training program that they attended. A number of factors the participants' reaction and can be controlled by the organization. These factors, as highlighted by (Kidder & Rouiller, 1997), are the content of the training program, the performance of the trainer and the training materials.

The participants' reaction is important for different reasons. First, it can help in the redesigning and improving of the training programs on offer (Brinkerhoff, 1986). Second, it acts as a "customer relations" function which shows that the training function is interested in comments on the service provided (Heneman, Huett, Lavigna, & Ogsten, 1995). Third, reactions can be used as a predictor of other, more costly evaluation criteria of training effectiveness, i.e. measures of behavior on-the-job, learning or performance and ROI. It is argued that the understanding of reaction sheets will increase the understanding of the trainees' role in the effectiveness of the training. This may lead to conditions in which they serve as predictors for the participants' learning, changes of behavior and performance on the job. For this reason, measuring reaction is one of the variables that influence training effectiveness (Morgan & Casper, 2000). As noted by (Mathieu et al., 1992), reactions can have an indirect effect on both learning and post-training performance. Specifically, reactions can act as a moderator in the relationship between motivation and learning. It can also act as a mediator in the relationship between motivation and post-training performance. Consequently, the previous literature indicates that measuring reaction may have a role in understanding training effectiveness (Morgan & Casper, 2000).

As suggested by Kirpatrick (Craig, 1996; Kirkpatrick, 1994), a suitable reaction evaluation gives the maximum information within the minimum time. Therefore, Kirpatrick does not specify any factors in particular nor give specfic guidelines for measuring reaction; his study gives sample reaction forms only (Kirkpatrick & Kirkpatrick, 2006). Other authors suggest guidelines for the dimensions of measuring the reaction of partcipants; see (Basarab & Root, 1992; Campbell, 1998; Forsyth, Jolliffe, & Stevens, 1995; Phillips, 1996; Sanderson, 1995; Van Wart, 1993). According to the previous literature, the dimensions of reaction that can be evaluated can be summarised as follows:

- Program objectives
- Program content

- Delivery methods/technologies
- Instructor/facilitator: instructional activities
- Learning Assessment (Wentling & Lawson, 1975)
- Program time/ length
- Training environment
- Planned action/transfer expectations
- Logistics/administration
- Overall levaluation/reaction to training program
- Recommendations for program improvements (Lee & Ming, 1999)

There is little information available in the literature regarding the evaluation of vocational/competency models (Burnett et al., 1998; Käppliner, 2007; MacGraw & Peoples, 1996).Hence, the present study focuses on the constructs that are within the control of the company when evaluating such programs. In creating a model that will help in identifying the factors that contribute to the effectiveness of the competency model, only the factors that are within the control of the company will be selected. From previous studies, it is found that companies have less control over trainees' characteristics but more control over the training design and work environment (Knyphausen-Aufseß et al., 2009). For example, cognitive ability and self-efficacy cannot be influenced by the company which means that they are not within its "sphere of control" or susceptible to financial efforts (the "cost-value ratio"). Sphere of control means the extent to which the Human Resource Development division can affect the transfer factor, e.g. though organized training. The cost-value ratio is defined as the quotient of the company and financial effort (input) and the final training transfer (output). This ratio helps to discover the important factors that are worth the investment of the organization when implementing a training program (Knyphausen-Aufseß et al., 2009). According to Knyphausen-Aufseß et al. (2009), the variables of social support and training content are worth investing in because they are within the company's sphere of control and have a high cost-value ratio. Nevertheless, creating a favorable work environment using the support of supervisors and peers is within the control of organizations. Similarly, developing and modifying the training content is within the organization's control and requires no great financial investment. However, it may be argued that peer support is perhaps a tricky variable to study. This factor may not have cost-value ratio but it affects the employee's time. Organizations would not have direct control over their employees' teaching their peers even if they provided them with the needed time to do so. If employees are going to spend time with their peers in order to share their experience and knowledge, this will result in using work time for training activities, when employees should rather be spending their time working to accomplish the organization's objectives. Consequently, organizations and training practitioners should not invest their efforts on peer support but rather on supervisor support (Buckingham & Coffman, 2007; Lionetti, 2012). The other variables related to work environment, i.e. the opportunity to perform and the transfer climate, will not be a focus of the present research because competency models are designed on the basis of the related job tasks of the trainee. In addition, the trainee is working on the program when carrying out his/her normal job task and ensuring that evidence is provided from his/her job that shows him/her as competent in the assessments. For this reason, out of the possible work environment variables this study focuses on supervisory support activities.

The intention of this study is not to measure whether competency models are effective or not, but rather to study which factors make the competency model effective from the perspective of the participants.

As noted above, level one of Kirkpatrick's model is the one used in the present research. The constructs or measures are adapted so as to study the competency-based models available in an oil company. When studying such models, researchers need to be creative and innovative, because the nature of such models is different from that in traditional training programs and for this reason the evaluation model needs some modification (Dubois & Rothwell, 2004a, 2004b). In addition, measuring reaction should include specific constructs/questions which are related to the particular program of study, in order to focus more closely on the program's content and process (Robinson & Robinson, 1989). Hence, the training design and work environment constructs are modified here to suit the nature of the competency model and its components. For example, the training design is called the "competency model design". It consists of the competency model goals, relevant content and material. The work environment variables consist of supervisory support. Supervisory support of the kind provided to trainees to whom the competency model is being applied is broken down into a range of supporting role processes, namely, coaching, assessing and verifying (Al Matroushi, 2004). The only supporting role process that is specific to the studied competency model in the oil company is advising. Advising in the support process is one of the work environment variables.

The created model of the current research studies the following:

- The relationship between the competency model design, i.e. the competency model goals, the relevance of the content and material and its effect on the perception among trainees of the effectiveness of the competency model.
- The effect of the design of the competency model on the work environment variables from the perspective of the trainees.
- The factors of the competency model design and work environment that make the competency model effective from the perspective of trainees.

Summary

This chapter has reviewed the value of/need for competency models in organizations, the structure of the competency model and the way to build a core competency model. The differences between the competency models and a traditional training program were highlighted and examples of applying competency models internationally and in the UAE were discussed. The history of competency models and the relevance of competency models to adult learning theories were presented. Finally, the chapter discussed the model used to identify those factors that make the competency model effective from the perspective of the trainees.

Chapter 3: Perceived Effectiveness of the Competency Model: Hypothesis Development

In order to study the factors that contribute to the perceived effectiveness of the competency-based model, the path model was developed on the reaction of participants to the design of the competency model and the work environment variables mentioned in Chapter 2. The model outlines the relationship between the outcome, which is the perceived effectiveness of the competency-based model when it has the proposed model design, i.e. the proposed goal of this model, the relevance of the content and material and the work environment variables, which consist of five processes: supervision, advising, coaching, assessment and verification.

The aim of providing employees with a competency-based model is to enable them to perform their work tasks competently and at the required standard. The perceived effectiveness of the competency-based model refers to the perceived level at which the program/model reaches the intended objectives/goals or expected outcomes (Paek, 2005). Effectiveness is attained when the trainee is applying what he/she learns in doing the job (Bates & Coyne, 2005). In addition, the expected outcome of the competency model is that the employees who undergo the program are competent in performing their job tasks. Furthermore, they become self-directed learners, which means that they learn to perform the work without direct supervision (Novia & Fernandes, 2014). In order to study the factors that makes the program effective from the perspective of the participants, Kirkpatrick's first level of evaluation was used; that is, the trainees' reaction to the program. Studying this reaction is akin to measuring the satisfaction of trainees (Kirkpatrick & Kirkpatrick, 2006).

3.1 Relationship between the Design of the Competency Model and its Perceived Effectiveness

Traditional training program design has an effect on the effectiveness of training (Alvarez et al., 2004). Training design incorporates the content of the training program and learning principles which considers the objectives, the structure of the content and the material used in the training programs (Munna & Suring, 2011). Inadequate training design could impede the transfer of training by making the trainees unable to apply the newly learned knowledge and skills (Holton, 1996; Yasin et al., 2013). For this reason, the training design has an effect on the transfer of learning (Aziz & Ahmad, 2011; Blume et al., 2010; Burke & Hutchins, 2007; Hutchins, 2009). The same effect can be assumed with regard to the design of the competency model. Inappropriate design at this point could affect the program's effectiveness. Since competency models consist of a set of competencies that are relevant to the trainees' job, creating a program with an inappropriate set of competencies could affect the development of the trainees. For this reason, organizations need to design programs with the help of subject matter experts who are aware of the set of competencies, which are most closely related to the trainees' job. Competency models include competencies relevant to the trainees' work tasks, using exercises based on authentic work. The aim of such exercises is to elicit evidence from the trainees during the assessments that they are competent (Davidson & Al Zadjali, 1999; Fletcher, 1997). It can be assumed that this will help to improve the transfer of the learning/training content by the participants (Rodríguez & Gregory, 2005; Yasin et al., 2013). The purposes of planning the right training program are to improve employees' performance and retain them in the company (Yasin et al., 2013). This applies also to planning the right competency models by the subject matter experts (SMEs) (Rothwell & Graber, 2010). Similar to traditional training program design, competency model design consists of the goal of the competency model and relevance of its content and material to the trainee's job.

3.1.1 Competency Model Goal

Subject Matter Experts (SMEs) need to know the company's vision, mission and values before creating the competency models for each job family. It is found that training programs should be aligned/linked to the company's objectives (Holton, 1996; Niazi, 2011). Hence, when SMEs create competency models they can ensure that these are in line with the company's objectives, to create clear and concise objectives for the employees and supervisors which will help them to understand what is required from them in their job roles (Connor et al., 2014; El-Baz & El-Sayegh, 2010; Mukherjee, 2011). If they aligned in this way, the competency models can be designed to support the employees' development and lead to their better performance in terms of the company's required competencies and to support for the organization's strategic directives (Mukherjee, 2011).

It is important to set the training goals carefully so as to ensure that they are suitable for the process of evaluating the training (Kirkpatrick, 1996). The objectives should be "well defined" (meaning "clear" (Collins, 2002)) and should enable the trainees to reach the aim that is set for them (Goldstein, 1989); they should also be part of the program plan (Tennant, Boonkrong, & Roberts, 2002) which focuses on the knowledge, skill and attitude level of the participants. A review of the current literature indicates that program objectives relate to training evaluation (Houlton III, 1998) because program developers understand the reason(s) for designing or redesigning a program in light of the objectives that have been set (Miller, 2002). Training objectives are used as one of the benchmarks for training evaluations and in designing new programs (Barrington & Reid, 1992). The previous literature also highlights that the training objectives need to be consistent with the purpose of the training evaluations (Lee & Ming, 1999). In addition, it is noted in the literature that certain factors affect the training results (Aldrich, 2002) and participants' feedback, which in turn affects the training evaluation. One of these factors is the objectives of the program (Kirkpatrick, 1996). This factor has the ability to influence the results of the training evaluation (Eseryel, 2002), in particular the reaction of the participants (Jeng & Hsu, 2005).

Training objectives are important for several reasons. First, they help to identify the activities that the participants should be able to join in at the end of the program (Buckley & Caple, 2004). Second, they are the "pillars" of programs, meaning that a weak set of objectives will lead to program failure (Silberman, 2006). Third, they help to answer the participants' questions on the lines of "Why do I need to take part in this training?" because the goals of the program should motivate the trainees to participate (Silberman, 2006). In addition, they should answer the question "What's in it for me?" (Jolles, 2005). Fourth, training objectives help to measure the effectiveness of programs with regard to knowledge, skills and attitudes. Training objectives help to set the scope of the training program (so that it does not transcend what was intended for it) (Silberman, 2006).

3.1.2 Relevance of the Competency Model Content and Material

Competency based models/frameworks used in the oil company under present scrutiny consist of competency clusters, behavior indicators and proficiency levels. It is important to identify the related job competencies, as noted by (McClelland, 1973), in order to distinguish between employees with superior performance and those with average performance. Later, (Prahalad & Hamel, 1990) emphasized the need to identify the company's core competencies in order to achieve competitive advantage and higher profits than its competitors. This purpose is achieved by employees becoming competent and gaining thee skills required to do their jobs, which means they become able to contribute to enhancing the company's performance. The different proficiency levels among employees undergoing the program helps to compare them and distinguish the better ones (Mukherjee, 2011). Proficiency levels indicate the employees' progress in the program from novice to expert, in other words, their moving from unconscious incompetence to unconscious competence in the performance of their job (Lombardozzi, 2007). This shows why it is vital that the language used for the behavior indicators should be clear, simple and easy to understand. In addition, the language used should be familiar to all the employees who learn from the model. Furthermore, the employees who do so should be able to identify the behavior indicators as part of their role or job on account of its relevance. The structure of the competency model and competency clusters, in addition, should be simple and logical (Al Matroushi et al., 2008; Whiddett & Hollyforde, 2008; Whiddett, Hollyforde, & Whiddett, 2003).

The content and material also influence the outcomes of the training program (Farr, Hofmann, & Ringenbach, 1993) as well as the participants' reaction to it; i.e. if there is too much repetition in the content or if it is misunderstood by the participants, this will affect the measurement (Lee & Ming, 1999). Hence, program content and material are factors which influence the training evaluation and specifically the participants' reaction (Iqbal, Maharvi, Malik, & Khan, 2011). Indria (2008) finds that 55% of participants believe that the program content and training material influence the training evaluation, trainee reaction most of all. In addition, the training content and material affect the satisfaction of participants (Rajeev, Madan, & Jayarajan, 2009) and at best can ensure the effectiveness of the program (Forsyth et al., 1995). Training effectiveness is a result of the participants' satisfaction with different aspects of the training, as mentioned by Giangreco et al. (2009). First, the training content/topics should be related to the participants' job tasks. Second, the content should match the needs of the participants (Brown & Reed, 2002). Third, the content should usually help the participants to develop (Noe, 1986). Fourth, the participants should find a balance between the theory presented in the content and its practical aspects (Morgan & Casper, 2000). It is also indicated by Basarab & Root (1992) that the content of a program necessarily affects the training offered. Finally, it is important that the content and the material of the program should be appropriate and well structured (Robinson & Robinson, 1989). In another study, however, it was shown that the perceived usefulness of the traditional training program and the learning is affected directly by the program goals and material and indirectly by the training content (Diamantidis & Chatzoglou, 2012).

The above discussion looked at the effect of traditional training goals, content and material on training effectiveness. It can be argued that if traditional training design has an effect on training effectiveness then it can be hypothesized that competency model design will have the same effect on the perceived effectiveness of competency-based model.

- H1: Competency model design i.e. the competency model's goal and the relevance of its content and material to the participant's job will have a positive effect on his/her perception of the effectiveness of the competency-based model.

3.2 Relationship between the Competency Model Design and the Work Environment Factors

Designing excellent training programs and delivering them in the right way will not guarantee that they will be successful unless they are supported by the environment of their implementation (Grossman & Salas, 2011). Work environment factors, thus, affect training effectiveness (Alvarez et al., 2004). Among the work environment factors, this study will focus on the supervisory support that is mentioned in the literature review because of its relevance to competency model. However, support in competency models comes not only from supervisors but also from coaches, assessors, verifiers, and advisors. Thus this research will look at the support itself and not on the characteristics of the personnel who provide it.

.The processes that support the success of competency models in the oil and gas company under scrutiny are those of supervision, coaching, advising, assessment and verification (Al Matroushi, 2004; Leuro & Kruger, 2014):

3.2.1 Relationship between Competency Model Design and Supervision Process

The supervisor is the person in charge of tracking the outputs of the trainee at work. S/he structures and puts forward an action plan for in order to close the competency gap and attain the required standard in performing the trainee's job tasks (Al Matroushi, 2004; *Competence Assurance Guidelines*, 2002). The supervisor's support is one of the variables that must be measured because it influences the effectiveness of the training (Baldwin & Ford, 1988; Fishbein & Stasson, 1990; Noe & Schmitt, 1986). There is a close correlation between the support of supervisors and training effectiveness (Huang, 2001). As indicated by Shafer (1998), training programs will not be effective without the support of supervisors. It is the support from supervisors that makes the training process effective (Burke & Baldwin, 1999; Ford & Weissbein, 1997; Rouiller & Goldstein, 1993). Conversely, a weak relationship with supervisors can negatively affect a participant's development (Santos & Stuart, 2003). Having one's supervisor's support in the competency program initiative is vital. The supervisor contributes in the following ways (Shandler, 2000):

- Aligning the employees' learning objectives with the company's strategic goals
- Discussing the expectations from the employees in order to elicit superior performance before, during and after the competency program
- Sparing the employees the needed time to work on their competency program in order to encourage self-directed learning.
- Using the required and appropriate structured on-the-job methods to support the employees' learning

- Assisting the employees to improve their performance by linking what they learn to the tasks of the job.

One of the tools used to align/translate the company's objectives into learning opportunities is the individual development plan (Shandler, 2000). The Individual Development Plan (IDP) is part of the competency assessment process. In such a process, the employee is assessed against a set of competencies, which help to identify the employee's competency gap (the current level of performance against the level required in the competency model for his/her job) (Rothwell & Graber, 2010). After identifying the competency gap, it is important for the manager/direct supervisor to put forward an Individual/Personal Development Plan (IDP/PDP) for such employees as are going through the competency based program (Parsloe, 2003). The IDP helps the employee to understand his/her weaknesses, the level of required performance that s/he needs to reach and his/her strengths. In addition, the goals listed in the IDP are linked to certain competency and development resources (Rothwell & Graber, 2010). The IDP/PDP will usually have the following elements (Rothwell & Graber, 2010):

- The name of the employee who is going through the competency program
- The contact details of the employee: i.e. phone, email, fax
- The employee's direct supervisor
- The list of competency clusters or behavior indicators taken from the competency model
- The list of objectives created on the basis of the competency clusters and behavior indicators

- The list of learning resources: i.e. e-learning, books, and so on, for meeting the objectives
- Deadlines for meeting the objectives
- The methods that will be used to measure the outcome or to assess the level of performance
- Estimated budget for the learning exercise (optional)

In the oil company that is the focus of the present study, the following elements are mentioned in the Personal Development Plan of each trainee:

- Cover page (employee name, employee position, period of the plan)
- Employee profile details, covering:
  - Employee's general information; i.e. name, email, date of birth, degree, phone number, department and position
  - Prerequisites i.e. English score, Basic safety induction course and International Driving Computer License (ICDL)
  - Development time frame; i.e. start date, end date, graduation date from the program.
  - The program's management team; i.e. name of the primary coach, assessor, verifier and supervisor
  - Approvals and signatures of the program management team
- Amount of progress made in the competency assessments
- Planning details which will be covered (SMART approach):

- Real work objectives and description of each objective: they answer the question *"What is the work needing to be covered by the employee beyond the training program?"*
- Key Performance Indicators (KPI): which answer the question *"How does this task support your team KPI?* Graduate performance should be measured by evaluating outcomes/evidence; i.e. Observation, Product or Question and its status; i.e. completed, in progress, not competed
- Element Number from the competency model: this answers the question *"What are the required elements/competencies required from the competency model that could be mapped with the real work/task and would make it achievable?"*
- Development method: this answers the question *"What are the available resources and development methods required to gain the competency and accomplish the job tasks/real work?"* Examples of the development methods are On-the-Job Training (OJT), Instructor-Led Training (ILT), etc.
- Time: this answers the question of *"What is the time required to gain the competency and complete the task?"*

- Summary of assessments (competencies assessed, name of assessor and level of competency)
- List of training courses that the employee has attended

- Bi-annual Review: this review meeting involves the employee, his coach, his manager and Manpower development Advisor (MD Advisor), who discuss the following:
  - Employees' progress against the plan
  - Real work/Job tasks activities
  - Coaching and the assessment process
  - Training courses attended or agreed
  - Concerns, recommendations and the way forward

This plan or joint agreement between the employee and his manager help to clarify the expectations of the manager and put things in the right perspective for all parties. It also contributes to solving many other problems and adds value to the employee (Stimson, 1995). The plan between the employee and the supervisor is seen as a "learning contract": it is a commitment by the two parties to meet the agreed objectives (Parsloe, 2003).

The competency based model should be clear, relevant to the employee's job/role and specific in order for the supervisor to give feedback to the employee, choose the right on-the-job methods, link the competencies with the employee's work and put forward the employee's development plan. The model help the supervisor do his work to a high standard (Lucia & Lepsinger, 1999; Whiddett & Hollyforde, 2008). The competency model ensures that the employee and his/her manager/direct supervisor have the same overall goals and sense of what is required to be competent and give superior performance. It also gives the supervisor examples of the behavior indicators that are required from any employee who wants to gain the required skills and knowledge for the job/role (Lucia & Lepsinger, 1999). This leads to the following hypothesis:

- H2: Competency model design i.e. the competency model's goal and the relevance of its content and material to the participant's job will have a positive effect on his/her perception of the effectiveness of the supervision process.

3.2.2 Relationship between Competency Model Design and Coaching Process

The coach is the person in charge of helping the trainee to grow and develop in the workplace by providing him/her with the required direction. S/he encourages the individual to attain the desired outcome and to stay focused and motivated as well as monitoring his/her progress (Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,"). In order for the coach to carry out his/her role efficiently and be part of a competence development program helping adults in their learning journey, s/he needs to understand the principles of adult learning (Avillion, Brunt, & Ferrell, 2007; Parsloe, 1995). The andragogical model of adult learning is the art and science of helping adult learners, which is based upon two concepts. The first is "self-direction" and the second is "facilitation" – "the role of the teacher is not to explain the learning content but rather [to be] a facilitator of learning" (Pratt, 1998). The needs of adult learners are met in the competency based model (Shandler, 2000). The principles are as follows: (Knowles et al., 2012):

- Adults need to know the reason for learning something before deciding to learn it. According to Tough (1979), when adults are given something to learn on their own, they will do their best to understand the benefits that they will gain from it. For this reason, the coach/facilitator has to help the adults by identifying the values that will be gained from the learning program and the way that it will help them to improve their performance. The coach/facilitator should use the tools that will help the adults to discover for themselves the gap between their current level and the one they need to reach (Knowles et al., 2012). The Personal Development Plan between the manager and the employee in the competency program is one of these tools (Rothwell & Graber, 2010)

- Adults show resistance in situations where they feel that learning is imposed on them. They believe that they have the right to make their own decisions regarding their learning, referred to as the "self-concept". Thus the coach/facilitator needs to recognize the need for educators to make the competency program self-directed in order for the trainees to take ownership of their learning, continue in it and not drop out (Knowles et al., 2012).
- The past experience of adults needs to be recognized by the coach/facilitator because for adults this is part of their "self-identity". If their experience is ignored, adults assume that not only their experience but also they themselves are ignored as persons. Furthermore, adults with greater experience tend to build their own beliefs and habits as if they were self-sufficient and close their minds to new ideas. Hence, coaches/facilitators do well to help adults examine these habits and open their eyes to new ideas for learning (Knowles et al., 2012).

- Adults are ready to learn the things they need to know in order to cope with the situations they meet in practice. One way to encourage adults to be ready to learn is to link development tasks to authentic scenarios; this helps adults to move from one stage to the next (Knowles et al., 2012).
- Adults are task-centered or problem-centered in their way of learning. They are motivated to learn when they are in an environment that puts them into authentic scenarios. This environment helps adults to learn the skills and knowledge that they need when facing such a situation (Knowles et al., 2012)
- Adults are motivated to learn when they receive incentives, i.e. promotions, better pay, etc., or have other, internal, motivators, i.e. self-esteem, job satisfaction, etc. (Knowles et al., 2012). Adults are motivated to learn but they could lose interest when they are faced with programs that ignore their self-concept and principles of adult learning (Tough, 1979).

The types of coaching of coaching can be differentiated by being relevant to learning, to developing competencies, to personal growth/career development and to improving performance. Two methods of coaching are hands-on and hands-off. The hands-on method can be used with new employees, while the hands-off method could be used when the aim is to improve the performance of experienced employees (Parsloe, 1995). It is worth mentioning that the coach can move from hands-on to hands-off when s/he sees an improvement in the trainee's performance. This puts the responsibility for learning on the trainee (Parsloe, 2003). The coach can use other methods, for example, by being a Supporter: this method is used when helping trainees to use a flexible learning package. Otherwise, a coach can be a Qualifier, for example when helping a trainee develop specific knowledge or a skill under a competency based model or for a professional qualification (Parsloe, 1995).

The coach should have detailed knowledge of the competency based program, the requirements for it and the competencies mentioned in the competency model; i.e. behavior indicators and proficiency level. With the right knowledge the coach can perform the following tasks (Parsloe, 1995(Parsloe, 2003)):

- Analyze or review the trainee's current level of performance and then identify the gaps that must be bridged before the required standards and goals are met
- Plan and choose suitable training resources or methods and set out a plan for the trainee. In addition, the coach plans ultimately for "self-responsibility". Not until the trainees take responsibility for their own learning is the time reached when they actually gain benefit. When coaches ignore this step, then the training that they offer is unstructured and fails to concentrate on the important issues. If the goal is that the trainee should manage his/her own training, then the coach must plan how this is to be done. A coach cannot impose training on the participants and hence they should be involved in the decision making. Thus a coach should agree on a Personal Development Plan (PDP) with the trainees' managers in order to ensure that the needed time and space during the working day are set aside for learning.
- Explain the relevant concepts to the trainees, supervise their work and ensure that feedback is provided during the process. The coach uses relevant learning styles and techniques.

- Assess and evaluate the trainees' achievements during the program and in this way motivate trainees to apply the learned skills to their daily work

In previous research, it was suggested that the coaching process could lead to enhancing the trainees' self-efficacy, self-awareness and motivation to transfer (Joyce & Showers, 1980). Although it is not within the scope of the present study, others, such as Laske (1999) have looked at trainees' characteristics and indicated that personality factors and motivation could be predictors for the effectiveness of the coaching process. In another study by Wakkee, Elfring, and Monaghan (2010), it is found that there is no correlation between coaching and self-efficacy; this result is supported by a further study by (Bozer, Sarros, & Santora, 2013). The reason for this result may be lack of trust between the trainee and the coach. It is suggested by previous studies that self-efficacy is enhanced if the trust between these two is strong (Malone, 2001). Another possible reason is existing high levels of developmental self-efficacy among the trainees (Bozer et al., 2013).

In order for the coach to perform his role adequately, the competency model must be easy to understand and expressed in simple language which is relevant to the job/role. The competency cluster and behavior indicators relate to the competency model given to the employee. The clarity, simplicity and specificity of the competency model help the coach to perform the facilitator's role efficiently (Lucia & Lepsinger, 1999). Testing the following hypothesis validates the above assertions:

- H3: Competency model design, i.e. the competency model goal and relevance of its content and material to the participant's job will have a positive effect on his/her perception of the coaching process

3.2.3 Relationship between Competency Model Design, Assessment and Verification Process

The assessor and verifier are the people who, having received adequate training and qualification for doing so, are charged with performing the function of assessment and verification (Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,"). Assessing or verifying competencies means assessing employees on what they can do (though not on their ability to memorize and pass tests). In this sense, assessing against performance criteria means assessing employees as they perform a task so as to be rated as competent candidates and providing evidence that they can do it. Assessment and verification are tools used to ensure that trainees can perform their duties according to the standards set by the organization (or the industry if available) without supervision (Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014). Competency based models consist of a number of units, each of which has a cluster of related functions, called elements. Each element consists of performance criteria that must be met in order to demonstrate that the candidate is competent. Usually each element carries a statement on the range of cases/situations in which the candidate should show competence. In addition, the professional levels are identified, i.e. those of awareness, knowledge, skill and mastery. Next, the type of evidence for the trainees to present is also identified. Trainees need to show evidence that they are able to perform the task to the required standard. The assessor's and the verifier's role is to judge whether or not the candidate's evidence guarantees his/her competence. Providing the evidence during the assessment is solely a task for the trainee. In competency based models trainees should accept their role and be responsible for looking for their own information. Candidates should look for the information, ask questions and create their own profile with all the needed evidence (Parsloe, 1995). Searching for the information will help trainees to understand the job related technical and functional skills to improve their performance (Connor et al., 2014). The process of competency assessment in the oil and gas company under study is in line with the competency assessment process of McClelland (1973).

Assessors and verifiers should be trained to make them eligible to conduct an assessment or verification session with the trainee (Parsloe, 1995). Assessors and verifiers should be aware of the competencies in the trainee's program in order to be able to judge whether he/she is competent (Cotton, 1995). At the same time, if the assessor is to make the right judgment, the competency model should be measurable (Rothwell & Graber, 2010) In addition, assessors and verifiers need to keep the company's objective in mind when conducting the assessment and verification because the answers will vary from one organization to another (Parsloe, 1995). The main goal that assessors and verifiers should aim for is ensuring that the trainee is competent after completing the program to perform his/her job tasks to the required standard and without help (Parsloe, 1995).

In order to ensure the quality of the assessment process, the assessor and verifier must understand the concept and structure of the competency model; i.e. the competency cluster and behavior indicators. The assessor and verifier should also be superior performers if they are to assess the job/role in question (Fletcher, 2000). The clarity of understanding on the part of the assessor and the verifier comes from the clarity of the model and its relevance to the job (Lucia & Lepsinger, 1999). The validity of the above can be tested using the following hypotheses:

- H4: The competency model design i.e. the competency model goal and relevance of its content and material to the trainee's job will have a positive effect on his/her perception of the assessment process.
- H5: The competency model design i.e. competency model goal and relevance of its content and material to the trainee's job will have a positive effect on his/her perception of the verification process.

3.2.4 Relationship between Competency Model Design and Advising Process

The role of the advisor is specific to the oil organization chosen for the present research. The advisor in the oil company usually comes from the training and development department and it is his/her role to ensure that the assessor and verifier are following the assessment standards. In addition, he/she must ensure that the coach and mentor are following up the trainee's progress (Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,"). The advisor's role is to give the trainee his development framework and ensure that this person understands what is required from him/her during the program.

The advisor's role is to give the trainee her/his development framework and ensure that the trainee understands what is required from her/him during the program. The advisor is the one who gives the trainee the competency model. Hence, s/he must understand the structure of the competency model; i.e. the competency clusters, in order to be able to explain the content of the framework, i.e. the professional levels and the items of evidence required from the trainee. For this reason, the competency model should be designed to be clear, easy to comprehend and relevant to the trainees' job (Lucia & Lepsinger, 1999; Whiddett & Hollyforde, 2008). This statement may be test with the use of the following hypothesis:

- H6: Competency model design i.e. the competency model goal and relevance of the content and material to the trainee's job will have a positive effect on his/her perception of the advising process.

3.3 Relationship between the Work Environment Factors and the Perceived Effectiveness of the Competency Model

3.3.1 Relationship between Supervision Process and the Perceived Effectiveness of the Competency Model

Since supervision affects the transfer of training and training effectiveness (Bates, 2003; Homklin et al., 2013) it can, in addition, be argued in line with the author's experience as an internal researcher that the supervisor needs to draw a path for the trainee to follow and compile a plan that is updated every 6 months. Failure to do so will have a negative effect on the trainee's progress and consequently impair the effectiveness of the program. Broadly speaking, the following hypothesis encapsulates this:

- H7: The supervision process will have a positive effect on the trainee's perception of the effectiveness of the competency-based model

3.3.2 Relationship between Coaching Process and the Perceived Effectiveness of the Competency Model

The coach's role is one of the most important roles in the competency based program because s/he is the one who facilitate the trainee's learning (Parsloe, 1995, 2003). The coaching process consists of a set of transfer techniques (Joyce & Showers, 1980). In a recent survey by CIPD, coaching is considered one of the three top talent management activities that are most used and most effective in organizations (Chartered Institute of Personnel and Development, 2015). In another survey conducted in 2008, it was found that coaching is the primary driver used to increase productivity (Clutterbuck, 2008). Furthermore, it was found that installing a coaching process in the organization benefits both the employees and the organization. The coaching process can support employees as they transfer the knowledge learned in the training courses back to the workplace. Finally, coaching is one of the processes that support learning organizations (Clutterbuck, 2004), as the following hypothesis suggests:

- H8: The coaching provided to the trainee will have a positive effect on the trainee's perception of the effectiveness of the competency-based model

3.3.3 Relationship between Assessment, Verification Process and the Perceived Effectiveness of the Competency Model

Trainees should prepare for the assessment or the verification session with their coach. It can be assumed that if an assessor or verifier fails to assess the candidate properly and lets him/her pass without ensuring the provision of proper evidence then a negative perception of the effectiveness of the competency based model will result (Whiddett & Hollyforde, 2008). The assessment of trainees' learning is used to measure the quality and the effectiveness of traditional training programs (Praslova, 2010) and the same is assumed to apply to competency programs. The next two hypotheses refer to the above assertions:

- H9: The assessment process will have a positive effect on the trainee's perception of the effectiveness of the competency-based model
- H10: The verification process will have a positive effect on the trainee's perception of the effectiveness of the competency-based model

3.3.4 Relationship between Advising Process and the Perceived Effectiveness of the Competency Model

The advisor follows up the trainee's progress and ensures that the personal development plan is created by the supervisor. In addition, the advisor ensures that the trainee can complete the program on time. Finally, the advisor acts as liaison between the trainee and the supervisor. If the trainee has any issues with the supervisor, then the advisor is the one who should resolve them and support the trainee. It could be argued that if the trainee is not adequately supported by the advisor during the development program, then this can negatively affect the perception of the competency based model's effectiveness (Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,").

Since the relationship between the effectiveness of the competency model and the advising process was not studied empirically, it must be assumed that the advising process will have the same effect as the other processes. Whether this assumption is justified can be tested by means of the following hypothesis:

- H11: The advising process will have a positive effect on the trainee's perception of the effectiveness of the competency-based model

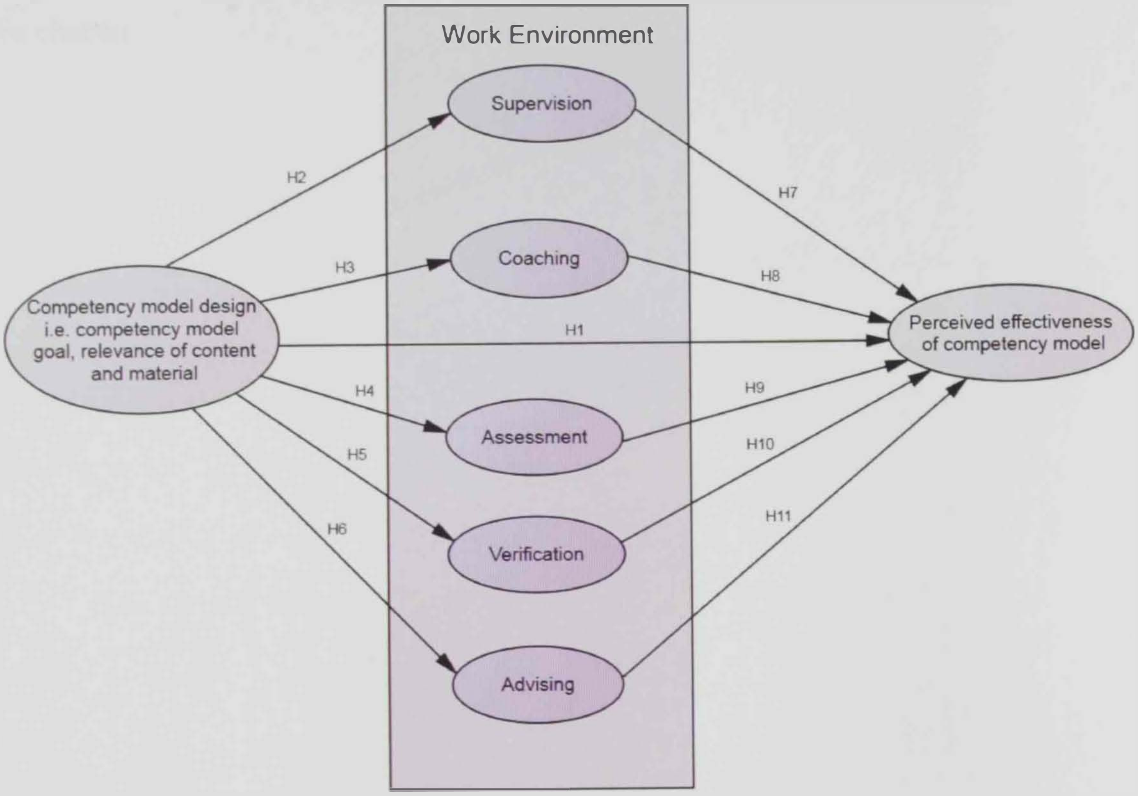

Figure 2: Conceptual Model

Summary

In this chapter, hypotheses have been developed concerning (a) the relationship between the competency model design and the work environment; (b) the relationship between the work environment construct and the perceived effectiveness of the competency model; and (c) the relationship between the competency model design and the perceived competency model effectiveness. These constructs will be used in the data analysis chapter.

Chapter 4: Methodology

The present chapter of this study describes the methodology for developing a research study introduced by Blaikie (2007) and Creswell and Plano Clark (2011). As indicated by these two accounts, a research study starts by choosing a research problem that is searchable. From this is derived the focus of the study, giving directives to the researcher. This study focuses from the perspective of the trainees on the factors that make the competency model effective. Next the research hypotheses are developed such that they can explain the nature of patterns that have been identified. Having research hypothesis support the deductive character of the research strategy used. Deductive research starts by testing relevant theories and eliminating the false ones. The researcher must at the outset choose a stance to adopt when collecting the data from the participants; here the stance is that of the "outside expert". The next step is to define the "Research paradigm"' as a way in which the evidence can be understood; how it can be understood relates to its epistemological and ontological assumptions. In this research, the assumptions of critical rationalism are adopted. The methodological approach taken to our evidence is quantitative. Finally, the questionnaire method is used to collect the data from the trainees who have experienced the competency model.

4.1 Research Problem

The statement of the problem indicates the scope of what is to be studied and highlights the areas that will be covered. This clarifies what the research will be about and what it will look at (refer to Chapter 1); we mainly study the constructs which, in the perception of trainees, make the competency model effective.

4.2 Research Strategy

The deductive approach is typically the one used in quantitative research (Creswell, 2014). The deductive research strategy which is referred to as the hypothetico-deductive method or the method of conjecture or refutation is the one followed in this study. This is based on the ontological assumption of the cautious realist and the epistemology of falsification. It derives its ontology and epistemology from the critical rationalist paradigm. The pioneer who developed this strategy is Karl Popper (Popper, 1959). The use of this strategy starts with a problem or question which needs to be understood or clarified. The first step is to generate either a new theory or an explanation from existing theory for the problem (Blaikie, 2007). Popper highlights the points for the research strategy. First, the study puts forward an idea, a hypothesis or a set of hypotheses that form a theory. Then, a conclusion is deduced from other already accepted hypotheses or by describing the criteria under which the hypothesis/theory is expected to hold. The conclusion or set of conclusions is examined and so is the logic of the argument that produced them. The results/arguments are compared with current theories to see if this enhances our understanding. If the researcher is content with the examination, then he/she can test the conclusion by collecting the needed data, making an observation or conducting experiments. If the data do not satisfy the conclusion, then the test has failed and the theory is rejected. This means that the original assumption is not consistent with the evidence and consequently should be rejected. If the data do satisfy the conclusion, then the theory has passed the test, which means that it is for the time supported. It cannot be proved to be true but it is at present corroborated (validated) (Popper, 1959).

The current study started by developing a theoretical model to explain the relationship between the trainees' perception of various components of the competency-based model and its effectiveness. Then the hypotheses were developed, as noted above, to explain the conditions in which they were expected to hold, so as to deduce a conclusion. These hypotheses were then tested through empirical observation, using a collection of techniques for applying theories to the external world in order to test their validity (Crowther, 2009). Finally a check was made to see whether the theory failed to explain the evidence or succeeded.

4.3 The Researcher's Stance

The researcher adopts a stance with regard to the type of interaction he/she has with the participants. The stance that is taken in this study is that of an outside expert, meaning that the researcher was distant from the social phenomena being studied and used methods and tools to enable her to observe the phenomena as an outsider. In addition, the researcher is considered an expert by virtue of using previous findings and other related knowledge as concepts and theories. The choice of research strategy may be one of the reasons for choosing the stance; thus it was found easier to be an "outside expert" when using a deductive research strategy (Blaikie, 2007).

4.4 Research Paradigm

The paradigm used in this study is Critical Rationalism because the deductive strategy in use derives its ontological and epistemological assumptions from this paradigm. The critical rationalist paradigm consists of the ontology of the cautious realist and the epistemology of falsificationism. This rejects the positivist epistemology of empiricism and for this reason it is referred to as post-positivism (Guba, 1990; Lincoln & Guba, 2000). The paradigm is based on the logic of explanation, which comes from the critical method of trial and error. Theories are examined against the available evidence. This method is usually called the "method of hypothesis", the hypothetico-deductive method or the falsificationist method; it is the basis for the deductive research strategy. The post-positivist paradigm is often used with quantitative methodologies/approaches. In this paradigm the researcher makes claims for knowledge based on cause-and-effect thinking, focusing on selecting variables to interrelate them, creating measurements for the variables and testing a set of theories that is continuously being refined (Slife & Williams, 1995)

4.5 Research Design

A research design is defined as the blueprint for the logical structure of the research; it helps to identify how the participants of the research will be grouped and how the data will be collected (Rovai, Baker, & Ponton, 2014). Quantitative research design in social science is either experimental or non-experimental (Gall, Gall, & Borg, 2007). A non-experimental design helps to identify a phenomenon and describe the variables under study. The relationships between the variables/constructs are studied without controlling the conditions or the participants of the study (Rovai et al., 2014). The type of non-experimental research that was used in the present study was an analytic survey. Survey research takes up a position between ethnographic and experimental research according to the intentions and dispositions of the researcher. For example, in some studies the researcher wants to study the causal relationships between the variables and take the logic of experimentation out of the laboratory and into the field. This requires deductive logic and, when analytical surveys are used, there is a connection to the logic of deductive inquiry. When conceptualizing and structuring an analytical survey, it is important to identify the dependent, independent and extraneous variables. This step requires the researcher to pay attention to any previous research, review of past literature or theory relevant to the problem under scrutiny. Studying the literature review thoroughly helps to reveal any relationships that may exist between the variables and any extraneous variables that may affect these relationships. The extraneous variables can be controlled by means of statistical techniques (Gill & Johnson, 2002). The statistical technique that was used in the present study was structural equation modelling. This control of extraneous variables is vital in the early stages, when the measurements of the variables under study are being taken and included in the questionnaire. Failing to identify the extraneous variables could affect the internal validity of the findings. Thus, a thorough analysis of the existing literature was necessary before developing the conceptual model of the research problem (Gill & Johnson, 2002).

4.6 Methodological Approach

The approach that was adopted for this research was quantitative (Creswell, 2011). Quantitative evidence helps to explain the relationships between constructs or describes the research problems through statistical trends in the data. A review of the quantitative literature plays a vital role in suggesting the research hypotheses to be tested in the study and in justifying the research problem and the direction of the study; i.e. the statement of the problem and the research hypotheses. It also develops purpose statements, research hypotheses that are specific, measurable and observable. The study includes numerical data collected from large samples. using the instruments/tools of preset questions and responses. The quantitative approach analyzes the data using statistical tools which help to discern trends, compare groups or relate variables, before interpreting the results by comparing them to results in the previous literature or past predictions/conclusions. In the final step this approach is take in the research report using fixed structures and taking as far as possible an unbiased approach

In quantitative research the researcher's aim is to identify a research problem based on trends in the study field or to study the reason that something occurs. Another purpose of using quantitative research is to study the relationship between variables (Creswell, 2011). In this study, the theoretical relationships between the constructs are tested using structural equation modelling.

4.7 Methods of Data Collection

Most primary quantitative data are collected through surveys, questionnaire or experiments. The data collection method in use this study was the questionnaire. The steps that should be taken to create a good questionnaire (Mooi & Sarstedt, 2011) start by determining the goal of the questionnaire; in this study the goal was to determine the factors that contribute to the effectiveness of competency models. Next, the researcher should consider the type of analysis required; in this study it was structural equation modelling. The researcher should go on to consider the type of data required for the analysis. The data for this study were collected from different sets of questions but these questions were all related to a certain construct. Finally the researcher should consider the type of information to be delivered; in this study, finding the factors that influence the effectiveness of competency based models was the main goal. The second step was to determine the type of questionnaire and the way it should be administered. In this case, the questionnaire was administered through the web (online questionnaire). Online questionnaires, being straightforward to create on the web, help to collect the data rapidly from the participants. They can be sent to a large sample of participants and make many functionalities available to the developer. The website used to create this study was research.net (Mooi & Sarstedt, 2011). Collecting data in this way may be as good as collecting responses from mail surveys and even better than interviews, since they do not involve interviewers and thus are free from interviewer bias (Bronner & Kuijlen, 2007; Ruyter, Deutskens, Jong, & Wetzels, 2006). Difficulties with online questionnaires could arise if long or detailed questionnaires were distributed or if, despite a random sample, the respondents tended to return biased answers due to the social desirability effect (Mooi & Sarstedt, 2011).

4.7.1 Sample selection

The target population is defined as the target for generalizing the results of the study. The HR department selected the target population of the present study, which consisted of 797 trainees who were currently being trained on the program. The sampling used for this study was non-probability sampling, specifically, "*purposive sampling*". Non-probability means that randomization is not used when selecting the sample. Purposive sampling / judgmental sampling means that the participants were selected on the basis of the researcher's knowledge of the target population. The selected participants had similar attributes to those of the required population (Rovai et al., 2014). The limitation of the selected sampling method is the lack of generalizability. Yet, this method is occasionally used by researchers (Glassner, Ksander, Johnson, & Berg, 1983)

4.7.2 Sample Size

Sample size has an effect on the factor analysis and the structural equation modelling used for this study. One of the recommended rules regarding sample size is to have 10 times as many participants as variables (Nunnally & Bernstein, 1987). Another recommended rule is to have between 5 and 10 participants per variable, up to a total of 300 (Kass & Tinsley, 1979). (Tabachnick & Fidell, 2014) recommend having at least 300 cases when conducting factor analysis, while Comrey and Lee (1992) suggest that 100 is a poor sample, 300 is a good sample and 1000 is excellent. For this study the sample size was 375.

The third step was to design the questions. The questionnaire embodied seven constructs and the items to measure each construct were taken from the existing literature, modified to match the goals of the current study (see Table 3). As mentioned in Chapter 2, the items used to evaluate traditional training need to be modified in order to be used to evaluate the competency based model (Dubois & Rothwell, 2004a, 2004b). For this reason, the items related to the constructs that are within the control of the company i.e. the competency model design, coaching, advising, supervising, assessment and verification process, were modified. These are shown below:

Table 3: Design of the questionnaire

Constructs	Original item	Modified item	Justifications for modifications	Sources
1. Competency model design, i.e. the goal of the competency model's and the relevance of its content and material to the participant's job (6 items)	The material covered in the program was relevant to my job	The content and material covered in the program are relevant to my job	Competency model design with regard to the content and material needing to be emphasized with regard to their relevance to the job.	(Kirkpatrick & Kirkpatrick, 2006)
	The content is clearly specified	It is easy to understand the content of the program	As part of the competency design, the content should be clear and easy to understand	(Holgado-Tello, Moscoso, Garcı´a, & Chaves, 2006)
	The objectives of the training were in line with my needs and interests	The program objectives, content and material are in line with my job needs	Competency models are designed according to the needs of the job by SPEs, not according to the needs of the trainees.	(Holgado-Tello et al., 2006)

Did the program content meet the stated objectives?	The program content meets the stated objectives	No modification was required	(Lee & Ming, 1999)
The method was well suited to the objectives and content	The program content and material are well suited to the objectives of the program	The competency models are self-directed learning, which means that the method is not the focus of the study. Hence, the content and material should be in line with the program objectives which are developing the trainee to be able to perform the job without a supervisor. This will be in line with the company's objectives.	(Holgado-Tello et al., 2006)

In general, I am satisfied with the content addressed in the training	In general, I am satisfied with the program goals, content and material used	The overall reaction of the trainee with regard to the competency model design needs to be measured	(Holgado-Tello et al., 2006)
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program?	Any comments or suggestions?	This is an open ended question asked in order to give the trainees the chance to express their opinion and overall reaction with regard to the competency model design. In addition, trainees can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

The purpose of modifying the above items is to be able to measure the competency model design with regard to how easy and clear it is to understand and with regard to its relevance to the trainees' job requirements.

Constructs	Original item	Modified item	Justifications for modifications	Sources
2. The supervision process (7 items)	S/he encourages participation in formal training programs	My supervisor explains to me the link between the competency framework and the job tasks	The supervisor supports the competency model by ensuring that the trainees understand the requirements of the program.	(Bare, 1978)
	My manager regularly discusses my training and development needs with me	My supervisor regularly discusses my training and development needs with me	In our study, the supervisor is also the manager	(Santos & Stuart, 2003)
	My manager jointly reviews progress on tasks and development goals at timely intervals	My supervisor reviews my progress on tasks and development goals with me at timely intervals	The supervisor is the manager also in our study	(Santos & Stuart, 2003)
	My supervisor meets with me to discuss ways to apply training in the job tasks.	My supervisor meets with me to discuss the ways of	The supervisors support the competency model by showing	(Holton III, Bates, Ruona, &

	implementing what I learn in the job tasks	trainees how to use their learning in their job tasks	Leimbach, 1998)
Supervisors discuss the content and benefits of a training program with employees before a training program.	My supervisor regularly discusses the content and benefits of the program with me	The competency model is a long term program that may last for up to 4 years; for this, regular progress checking is required	(Saks & Belcourt, 2006)
• My supervisor typically shows interest in what I learn in training programs • My supervisor shows interest in what I learn in training	My supervisor shows interest in my progress and what I learn in the program	It is important for the supervisor to support the trainees by checking their progress in the competency model	(Burke & Baldwin, 1999; Holton III et al., 1998)

In general, I am satisfied with the trainer's work	In general, I am satisfied with the supervision exercised/applied during my development program	The trainer in traditional training is replaced in the competency model by other roles, i.e. supervisor, advisor, coach, assessor and verifier	(Holgado-Tello et al., 2006)
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question asked in order to give the trainees the chance to express their opinion and overall reaction with regard to the supervision process. In addition, the trainee can make suggestions for improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

Slight changes were required in the items related to the supervisory process in order to make it relevant to the competency model.

Constructs	Original item	Modified item	Justifications for modifications	Sources
3. The coaching process (7 items)	Mentor gave you feedback regarding your performance in your present job (coaching)	My coach provides me with the required feedback regarding my performance	The role of the mentor is not within the scope of this study and for the present research purposes it was changed to 'coach'	(Raymond, 1988)
	[My] coach is knowledgeable, professional and helpful in providing support and direction	My coach is knowledgeable and helpful in providing support and direction	No modification was required	(Thach, 2002)
	The coach initiates a dialogue with the trainees that focuses on analysing their learning behavior and gives supportive	My coach gives supportive comments to improve my behavior	The interview comments from the original study were changed to a question format	(Truijen & Woerkom, 2008)

comments for improving this behavior			
The way the that trainer(s) taught the material made me feel more confident that I can apply it	The way my coach guides me through the material makes me feel more confident when it comes to applying it in the job tasks	The role of the trainer in the competency model was replaced by the role of the supervisor, the coach, the assessor, the verifier and the advisor and, for this reason, trainers were replaced by coaches. In addition, the support should help in applying the knowledge learned on the job	(Holton III et al., 1998)
The mentor helped you finish assignments/tasks or meet deadlines that otherwise	My coach helps me to finish assignments that otherwise would have been difficult to complete	The role of the mentor is beyond the scope of this study and it was hence changed to 'coach'	(Raymond, 1988)

would have been difficult to complete (Protection)			
The facilitator was effective presenting the material	My coach explains the material clearly to me	The coach in the competency model is a facilitator. In traditional training, the facilitator presents the material in a session or makes a presentation, whereas in the competency model the coach explains the framework/material while the trainee is doing the actual job/task.	(Kirkpatrick & Kirkpatrick, 2006)
In general, I am satisfied with the trainer's work	In general, I am satisfied with the coaching process	The trainer in traditional training is replaced in the competency model by other roles, i.e.	(Holgado-Tello et al., 2006)

	exercised/applied during my development program	supervisor, advisor, coach, assessor and verifier	
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question in order to give the trainees the chance to express their opinion and overall reaction with regard to the coaching process. In addition, the trainee can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

A few changes were required in the original items in order to help to measure the coaching process construct in the competency models.

Constructs	Original item	Modified item	Justifications for modifications	Sources
4. The assessment process (6 items)	"I more clearly understood my strengths and weaknesses as a result of participating in the assessment center" (reaction to skill assessment)	I clearly understand my strengths and weaknesses as a result of the assessment process applied	In our study the assessment process is conducted in the company, not in an assessment center	(Noe & Schmitt, 1986)
		The assessment process is comprehensive and measures all the important dimensions of the program	The question is developed on the basis of the definition in the literature	(Al Matroushi, 2004; Leuro & Kruger, 2014)
		The assessment process helps me become more competent	The question is developed on the basis of implementing competency models in organizations	(Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia &

		Fernandes, 2014; Parsloe, 1995)
The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program	The question is developed on the basis of the check list for creating competency models	(Lucia & Lepsinger, 1999; Whiddett & Hollyforde, 2008)
I am satisfied with the feedback provided at the end of the assessment	The question is developed on the basis of the assessor's role as outlined in the literature	(Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes,

			2014; Parsloe, 1995).
In general, I am satisfied with the trainer's work	In general, I am satisfied with the assessment process exercised/applied during my development program	The trainer in traditional training will be replaced in competency model by other roles, i.e. supervisor, advisor, coach, assessor and verifier	(Holgado-Tello et al., 2006)
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question in order to give the trainees the chance to express their opinion and overall reaction with regard to the assessment process. In addition, the trainee can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

The assessment process conducted in oil companies using the competency model is unique (Al Matroushi, 2004). Not all the items related to the assessment of traditional training are adequate for measuring the assessment process for competency models. This is why items specific to the assessment process of competency model should be developed for this research, in order to study the effect of the process on the perceived effectiveness of the competency model.

Constructs	Original item	Modified item	Justifications for modifications	Sources
5. The verification process (6 items)	The new skills were well rehearsed and test-checked by the trainer to ensure my proficiency.	The new skills covered in the program are well tested by the verifier to ensure that I am competent	In competency models, a verifier ensures that all the assessments have been conducted properly and that the candidate is competent.	(Chimote, 2010; Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014; Parsloe, 1995)
		The verification process is comprehensive and	The question is developed on the basis of the definition mentioned in the literature	(Al Matroushi, 2004; Leuro

measures all the important dimensions of the program		& Kruger, 2014)
The verification process helps me become competent	The question is developed to serve the purpose of implementing competency models in organizations	(Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014; Parsloe, 1995)
The questions asked during the verification are relevant and appropriate to the content and the material covered in the program	The question is developed on the basis of the check list for creating competency models	(Lucia & Lepsinger, 1999; Whiddett &

			Hollyforde, 2008)
	I am satisfied with the feedback provided at the end of the verification	The question is developed on the basis of the verifier's role as describe in the literature	(Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014; Parsloe, 1995).
In general, I am satisfied with the trainer's work	In general, I am satisfied with the verification process exercised/applied during my development program	The trainer in traditional training is replaced in the competency model by other roles i.e. supervisor, advisor, coach, assessor and verifier	(Holgado-Tello et al., 2006)

• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question in order to give the trainees the chance to express their opinion and overall reaction with regard to the verification process. In addition, the trainee can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

Like the assessment process, the verification process is unique to competency models. The verification process is similar to the assessment process, the only difference being that it ensures the correctness of the assessment process (Al Matroushi, 2004).

Constructs	Original item	Modified item	Justifications for modifications	Sources
6. The advising process (5 items)	I understood beforehand how the training would fit my job-related development.	I understood beforehand how the competency program would fit my job	The item is modified to reflect competency models	(Holton III et al., 1998)
	The expected outcomes of this training were clear at the beginning of the training.	The expected outcomes of the program were well clarified at the beginning of the program by the advisor	The advisor's role is to clarify the program to the trainee. The question was modified accordingly to reflect the advisor's job.	(Holton III et al., 1998)
	My supervisor meets with me regularly to work on problems I may be having when I try to use my training.	My advisor is supportive in solving problems that arise from time to time during the program	The question is modified to reflect the advisor's role in solving the trainees' problems	(Holton III et al., 1998)

	My advisor monitors my progress regularly	The question is developed according to the definition of the advisor's role in the literature.	(Al Matroushi, 2004)
In general, I am satisfied with the trainer's work	In general, I am satisfied with the advising process exercised/applied during my development program	The trainer in traditional training is replaced in the competency model by other roles i.e. supervisor, advisor, coach, assessor and verifier	(Holgado-Tello et al., 2006)
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question in order to give the trainees the chance to express their opinion and overall reaction with regard to the advising process. In addition, the trainee can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

The advisor's role is specific to thus study of the oil company. For this reason, some items from the literature were modified and others were developed as defined by the advisor's role (Al Matroushi, 2004)

Constructs	Original item	Modified item	Justifications for modifications	Sources
7.Perceived effectiveness of competency model (11 items)	The training I received is useful for my personal development	The program is useful for my career development	The questions is changed to reflect the effect of competency model in the employee's career development because competency is more closely related to the tasks required in the job than to what the trainee wants for his/her personal needs.	(Holgado-Tello et al., 2006)
	What is taught in training closely matches my job requirements.	What I learned in the program closely matches my job requirements	The competency model is learned by the trainee; it is "self-directed" learning. Hence the wording has	(Holton III et al., 1998)

		been changed from *is taught* to *is learned*	
The class helped me develop those skills	My knowledge and skills increased as a result of the program	Trainees gain the required knowledge and skills on the job when they are undergoing the program. They don't learn it in a class as they would with traditional training.	(Kirkpatrick & Kirkpatrick, 2006)
The training program allowed me to develop specific skills that I can use on the job.	The program allows me to develop specific skills that I can use on the job	Not many changes required	(Tan, Hall, & Boyce, 2003)
Training practices in this organization, prepare me to be more effective at my job	The program prepares me to be more effective on my job	Not many changes required	(Hutchings, Zhu, Cooper,

			Zhang, & Shao, 2009)
Training programs provide trainees with training experiences and conditions (surroundings, tasks, equipment) that closely resemble those in the actual work environment.	The program provides trainees with the experience required for the job	Competency models are designed to be relevant to the trainee's job. For this reason, there is no need to reproduce the work environment because the trainee works on the program while engaged in conventional work.	(Saks & Belcourt, 2006)
I would recommend this program to other employees who have the opportunity.	I would recommend this program to other employees who have the opportunity	No changes required	(Tan et al., 2003)

The training program helped me increase my employee performance	The program helped me increase my performance	Not many changes required	(Paek, 2005)
The knowledge gained in the training program is applicable to my job.	The knowledge and skills gained are directly applicable to my job	Not many changes required	(Chimote, 2010)
This training was a worthwhile investment in my career development.	The program helps prepare for better career opportunities within the company in the future	The aim of modifying the question is to see if competency models support career development inside the company. This means that employees who complete the program can handle higher positions.	(*Training Evaluation Field Guide: Demonstrating the Value of Training at Every Level,* January 2011)

The training program was, overall, very effective	In general, the program is very effective	Not many changes required	(Tan et al., 2003)
• Suggestions • What would you suggest to improve the training program? • Please make any comments for changes that would improve the program	Any comments or suggestions?	This is an open ended question in order to give the trainees the chance to express their opinion and overall reaction with regard to the perceived competency model effectiveness. In addition, the trainee can suggest improvements	(Kirkpatrick & Kirkpatrick, 2006; Lee & Ming, 1999)

The effectiveness of the competency model refers to whether the program reaches its intended objectives (Paek, 2005). In oil and gas companies, the main objective of the competency model is that employees at the end of the program are competent and able to perform the work without supervision (Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014). This made slight changes in the above items necessary in order

Closed-ended questions were used because they tend to get a higher response rate than open-ended questions (Mooi & Sarstedt, 2011). A five-item Likert scale was used for this study to calibrate the items, using the categories "Strongly disagree", "Disagree", "Don't know", "Agree" and "Strongly agree". The fourth step was to finalize the layout by explaining the purpose of conducting the questionnaire and assuring the participants that their answers would be confidential and would be used for academic purposes only. In addition, they were reminded that taking part in the study was voluntary. Other demographic details were gathered as part of the questionnaire, as follows:

- The Gender
- Nationality
- Age
- Current job
- Years of services in the company
- Job category
- Level of education

The final step was pretesting. The first pretesting was done by the researcher's advisor, who checked and reviewed the sequencing of the questions and suggested ways of improving the questionnaire. The second pretesting was done by 10 participants who went through the competency based program. The purpose of the feedback from the participants was to check that the questions were clear before sending the questionnaire to the whole sample. After the 10 participants had all made sure that all the items were clear, the questionnaire was ready to be published online (see Appendix III for the final draft of the questionnaire).

4.8 Informed Consent and Confidentiality

Before administering the questionnaire to the trainees of the oil company under review, a letter from the university was obtained, requesting permission for the researcher to conduct the study (see Appendix II). The letter was given to the Human Resources Department (HR) in order to get consent to proceed with the study. After the researcher obtained this consent, she was supplied by the HR department with a list of the trainees' names and email addresses, so that they could be sent the link to the questionnaire. In the email, the participants were informed that their participation was voluntary and assured that all the data gathered would be treated as confidential and not used for any purposes other than academic research. The respondents' names and identification information were not gathered as part of the questionnaire.

Summary

In this chapter the steps followed to develop the current research study were retraced. The following chapter presents the data analysis and the results.

Chapter 5: Data Analysis & Results

This chapter reports in detail the application of the statistical procedure, including the quantitative analysis and the results of the data collected from the questionnaire. The goal of this study, as noted previously, is to study the factors that make the competency based model effective. The questionnaire was conducted according to the procedure outlined in Chapter 4. A diagnostic description of the data collected from the questionnaire and the method of preparing the data for analysis is discussed below. This is followed by the descriptive statistics, including the respondents' demographics. To test our hypothesis or theoretical model, first, an exploratory factor analysis was used to explore the structure of the construct in SPSS v22. Second, our structure and measurement models were validated, using a confirmatory factor analysis in AMOS. Third, the structural model in AMOS was tested to ensure that the results fell within the recommended model fit thresholds.

5.1 Data Screening

As part of the data screening, the effect of missing data should be evaluated, outliers should be identified and other tests used for the assumptions underlying most multivariate techniques. These tests help to find the hidden effects that could be missed by the researcher. The tests that are conducted here are for missing data, outliers, normality, Homoscedasticity, linearity, and multicollinearity (Hair, Black, Babin, & Anderson, 2014):

5.1.1 Missing data

It is sometimes the case that there is a missing value in one or more of the variables. The researcher should study the patterns and relationships of the missing data in order to figure out the appropriate remedy which will maintain a close distribution of the original values. In this study, the 385 collected responses from the trainees were checked and ten of them were removed because they were incomplete responses. The usable sample is 375 trainees.

5.1.2 Outliers

These are checked to see whether some values that are very different from the other observations. They are usually judged by high or low value in a variable or across several variables that mark the observation out clearly among the other variables. In this research, all our variables were on a short ordinal equal interval scale (with a five-point Likert scale) and therefore allowed no extreme value outliers.

5.1.3 Normality

This refers to the shape of the data or the distribution of the data for a particular variable. In this study, normality was assessed by testing the shape, skewness and kurtosis. Skewness refers to the balance of the distribution of data, checking whether it is shifted to one side (right or left) or is centered (with the same shape on both sides). If the skewness value is more than 1, then the data is right skewed and if the value is less than -1 then the data is left skewed; a position in between these two is ideal. In addition, if the absolute value of the skewness is less than three times the standard error, then the data are satisfactory (Gaskin, 2012b). Kurtosis refers to the peaked shape or flatness of the distribution of data compared with normal distribution. The same tests as are used for skewness are applied but a more lenient rule is followed, namely, that a kurtosis problem should be flagged if the value is more than the absolute value of 2.2 (Sposito, Hand, & Skarpness, 1983).

Since most of our variables were based on a 5-point Likert scale, there was no reason to exclude variables based on skewness, unless they showed no variance. For this reason, kurtosis was focused on, rather than skewness. The rule followed for this study was to exclude a kurtosis value greater than the absolute value of 2.2 (Sposito et al., 1983). In this study, no major kurtosis issue was found (refer to appendix IV)

5.2 Demographic Statistics

The demographics of our respondents were analyzed to reveal the following:

- Gender
- Nationality
- Age
- Years of service in the company
- Job category
- Level of education
- Years in the CAMS program
- Status of CAMS completion
- Assessment stage
- Verification stage

Descriptive statistics for the survey respondents are shown in Table 3. Most of the participants were male (75.5%). Most of the respondents were UAE nationals (95.2%). The ages of the participants ranged between 23 (21.3%) and 32 (1.9%) years, but most of them were between 23 (21.3%) and 24 (19.5%) years old. Most of the participants had worked for 1 (21.3%), 2 (40.8%) or 4 (18.9%) years consecutively. Most of them held jobs in Technical/Engineering (54.1%). Most of them held a bachelor's degree (89.9%). Only 145 (41.1%) of the participants had completed the CAMS program, leaving 221 (58.9%) of them still involved in it. Of this group of 221, 94 (25.1%) were in Assessment 1 and Verification 1, 76 (20.3%) were in Assessment 2 and Verification 2 and 51 (13.6%) were in Assessment 3 and Verification 3.

Table 4: Demographic characteristics (n=375)

Measure	Frequency (N)	Percentage (%)
Gender		
Male	283	75.5
Female	92	24.5
Nationality		
UAE National	357	95.2
Other	18	4.8
Age		
23	80	21.3
24	73	19.5

25	52	13.9
26	71	18.9
27	57	15.2
28	21	5.6
29	9	2.4
30	7	1.9
31	4	1.1
32	1	.3
Years of service in the company		
1	80	21.3
2	73	19.5
3	53	14.1
4	71	18.9
5	57	15.2
6	20	5.3
7	9	2.4
8	7	1.9
9	4	1.1
10	1	.3
Job Category		
Managerial/Supervisory	75	20.0
Technical/Engineering	203	54.1
Administrative/Clerical	49	13.1

Specialist/ Professional	48	12.8
Level of Education		
Bachelor's degree	337	89.9
Master's degree	38	10.1
Status of CAMS completion		
completed	154	41.1
Not completed	221	58.9
Assessment stage		
Assessment 1	94	25.1
Assessment 2	76	20.3
Assessment 3	51	13.6
All	154	41.1
Verification stage		
Verification 1	94	25.1
Verification 2	76	20.3
Verification 3	51	13.6
All	154	41.1

The descriptive statistics for the response items are shown below in Table 5. The items are related to 7 constructs. The mean values indicate that the participants generally tend to earn favorable evaluations. The mean values for items 1 to 5 ranged from 3.14 to 3.93. In addition, the standard deviation (SD) values of items ranged from 0.93 to 1.41.

Table 5: Descriptive Statistics of survey items

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
Competency model design, i.e. the goal of the competency model and the relevance of its content and material to the participant's job					
1. The content and material covered in the program are relevant to my job	Material 1	3.5760	1.15576	1.00	5.00
2. It is easy to understand the content of the program	Material 2	3.4907	1.20129	1.00	5.00
3. The program objectives, content and material are in line with my job needs	Material 3	3.3387	1.29167	1.00	5.00
4. The program content meets the stated objectives	Material 4	3.4453	1.13833	1.00	5.00

5. The program content and material are well suited to the objectives of the program	Material 5	3.3147	1.26752	1.00	5.00
6. In general, I am satisfied with the program goals, content and material used	Material 6	3.3253	1.27324	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
2. The advising process					
1. Before the start of the competency program, I had a good understanding of how it would fit my job	Advising 1	3.3493	1.32765	1.00	5.00
2. The expected outcomes of the program were well clarified at the beginning of the program by the advisor	Advising 2	3.7013	1.16149	1.00	5.00
3. My advisor is supportive in solving the problems that arise from time to time during the program	Advising 3	3.9333	1.18517	1.00	5.00
4. My advisor monitors my progress regularly	Advising 4	3.3973	1.19468	1.00	5.00
5. In general, I am satisfied with the advising process exercised/applied during my development program	Advising 5	3.6693	1.25280	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
The coaching process					
1. My coach provides me with the required feedback regarding my performance	Coaching 1	3.2613	1.37431	1.00	5.00
2. My coach is knowledgeable and helpful in providing support and direction	Coaching 2	3.6827	1.27631	1.00	5.00
3. My coach gives supportive comments to improve my behavior	Coaching 3	3.6027	1.30179	1.00	5.00
4. The way my coach guides me through the material makes me feel more confident to apply it on the job	Coaching 4	3.3600	1.29417	1.00	5.00
5. My coach helps me to finish assignments that otherwise would have been difficult to complete	Coaching 5	3.5120	1.32610	1.00	5.00

6. My coach explains the material clearly to me	Coaching 6	3.3947	1.23192	1.00	5.00
7. In general, I am satisfied with the coaching process exercised/applied during my development program	Coaching 7	3.4587	1.37502	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
The supervision process					
1. My supervisor explains to me the link between the competency framework and the job tasks	Supervision 1	3.3547	1.28736	1.00	5.00
2. My supervisor regularly discusses my training and development needs with me	Supervision 2	3.2827	1.31633	1.00	5.00
3. My supervisor reviews my progress on tasks and development goals with me at timely intervals	Supervision 3	3.6880	1.08032	1.00	5.00
4. My supervisor meets with me to discuss the ways of implementing what I learn on the job	Supervision 4	3.8107	1.04646	1.00	5.00
5. My supervisor regularly discusses the content and benefits of the program with me	Supervision 5	3.5067	1.13493	1.00	5.00

6. My supervisor shows interest in my progress and what I learn in the program	Supervision 6	3.6933	.99697	1.00	5.00
7. In general, I am satisfied with the supervision exercised/applied during my development program	Supervision 7	3.4640	1.33571	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
Perceived effectiveness of the competency model					
1. The program is useful for my career development	Effectiveness 1	3.2373	1.39506	1.00	5.00
2. What I learn in the program closely matches my job requirements	Effectiveness 2	3.4587	1.10796	1.00	5.00
3. My knowledge and skills have increased as a result of the program	Effectiveness 3	3.1413	1.40616	1.00	5.00
4. The program allows me to develop specific skills that I can use on the job	Effectiveness 4	3.5413	1.14124	1.00	5.00
5. The program prepares me to be more effective on my job	Effectiveness 5	3.5440	1.13409	1.00	5.00

6. The program provides trainees with the experience required for the job	Effectiveness 6	3.6987	1.10535	1.00	5.00
7. I would recommend this program to other employees who have the opportunity	Effectiveness 7	3.7067	.93896	1.00	5.00
8. The program has helped me improve my performance	Effectiveness 8	3.6293	1.29321	1.00	5.00
9. The knowledge and skills gained are directly applicable to my job	Effectiveness 9	3.4693	1.12744	1.00	5.00
10. The program helps prepare for better career opportunities within the company in the future	Effectiveness 10	3.3813	1.34091	1.00	5.00
11. In general, the program is very effective	Effectiveness 11	3.3893	1.15295	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
The verification process					
1. The new skills covered in the program are well tested by the verifier to ensure that I am competent	Verification 1	3.3600	1.08268	1.00	5.00
2. The verification process is comprehensive and measures all the important dimensions of the program	Verification 2	3.6640	1.13484	1.00	5.00
3. The verification process helps me become competent	Verification 3	3.3147	1.39025	1.00	5.00
4. The questions asked during the verification are relevant and appropriate to the content and the material covered in the program	Verification 4	3.6613	1.10902	1.00	5.00

5. I am satisfied with the feedback provided at the end of the verification	Verification 5	3.7280	.97325	1.00	5.00
6. In general, I am satisfied with the verification process exercised/applied during my development program	Verification 6	3.6720	1.06306	1.00	5.00

Construct / Item	Item Name	Mean	Std. Deviation	Minimum	Maximum
The assessment process					
1. I clearly understand my strengths and weaknesses as a result of the assessment process applied	Assessment 1	3.2907	1.25740	1.00	5.00
2. The assessment process is comprehensive and measures all the important dimensions of the program	Assessment 2	3.6693	.92643	1.00	5.00
3. The assessment process helps me become more competent	Assessment 3	3.1520	1.33478	1.00	5.00
4. The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program	Assessment 4	3.6053	1.01801	1.00	5.00

5. I am satisfied with the feedback provided at the end of the assessment	Assessment 5	3.5333	1.07889	1.00	5.00
6. In general, I am satisfied with the assessment process exercised/applied during my development program	Assessment 6	3.6053	1.05414	1.00	5.00

5.3 Exploratory Factor Analysis (EFA)

This refers to a statistical technique used to define the correlation among the variables in a dataset (Hair et al., 2014). Using this analysis helps to build a factor structure (a grouping of variables based on close correlations). The benefit of conducting an EFA is that it can find any misfitting variables. EFA helps to prepare the variables to be used for a cleaner structure equation model. In this study the EFA was conducted using Principal Component Analysis with Promax rotation to see if the observed variables loaded together as expected, met the validity and reliability conditions and were correlated adequately. The principal component was used because it considers all the factors of variance and it extracts the factors that contain small proportions of unique variance and in some cases error variance. In principal component analysis, unities (values of 1.0) are inserted in the diagonal of the correlation matrix, so that the full variance is reflected in the factor matrix (Hair et al., 2014). Promax was used because the dataset in this case is large (n=375) and it can account for correlated factors. The adequacy of the model was checked, using the Kaiser-Meyer-Olkin (KMO) Measure and Bartlett's Test of Sphericity and testing the communalities. The two tests that were used for the basic assumptions were as follows: (Gaskin, 2012c).

- **The Kaiser-Meyer-Olkin (KMO) Measure:** this refers to the "Measure of Sampling Adequacy". It is helpful to know if the variables used in the dataset can be grouped into a smaller set of underlying constructs. KMO will vary from 0-1 and the researcher can proceed if it lies at 0.6 or higher (0.5 can be used for a more lenient cut-off point). If the value of the KMO is less than 0.5 then the factor analysis will not be as useful as it should be. The following are the thresholds for the KMO and its description (Gaskin, 2012c):

- Marvelous: .90s
- Meritorious: .80s
- Middling: .70s
- Mediocre: .60s
- Miserable: .50s
- Unacceptable: below .50

In this research, the score of the Kaiser-Meyer-Olkin (KMO) test for sampling adequacy was meritorious at 0.894 (refer to appendix V).

- **Bartlett's Test of Sphericity:** this test helps in comparing the developed correlation matrix with an identity matrix. An identity matrix refers to a correlation matrix with a principal diagonal of 1.0 and off-diagonals of zeros. A significant Bartlett test indicates that the variables do indeed have a relationship which is good enough to run a meaningful EFA (Gaskin, 2012c). Bartlett's test of sphericity in this study was significant (refer to appendix V)..

After checking the above two, the following were also checked:

- Communalities: this term refers to the extent to which an item correlates with all other items. Higher communalities are recommended. The communalities were checked if they were between 0.0 and 0.4; if so, then the variable would not load as significantly as expected on any construct. Communalities of ≥ 0.5 are recommended

(Gaskin, 2012c). After the analysis, the communalities for each item were sufficiently high (above 0.6), indicating that the selected items were adequately correlated for a factor analysis (refer to appendix V)..

- Residuals: this term refers to the difference between the value that a model predicts and the observed value in the dataset on which the model is based. In SPSS this is calculated and appears in the reproduced correlation matrix which contains the difference between the observed correlation coefficients and the values predicted from the model. For a good model, all values should be less than 0.05. SPSS provides a footnote which summarises the residuals that have an absolute value greater than 0.05. If more than 50% of the residuals are greater than 0.05, this is a sign of a problem in the model (Field, 2009; Yong & Pearce, 2013). In this research, the reproduced correlation matrix had 10% non-redundant residuals with absolute values greater than 0.05, which confirms the adequacy of the items and the 6-factor model (Gaskin, 2012c; Yong & Pearce, 2013) (refer to appendix V)..

- Total variance: variance refers to the value that represents the total amount of the dispersion of values for a single variable about its mean. If one variable correlates with another variable then it shares variance with this other variable, and the amount of sharing between the two is the squared correlation. Understanding how much a variable's variance is shared with other variables and how much cannot be shared or explained is vital in factor analysis. The total variance of any variable consists of one of three types, as follows:

  - Common variance: refers to the variance in a variable which is shared with all other variables. Common variance is shared on the basis of a variable's correlations with all other variables. The communality of a variable is an estimate of its shared or common variance among the variables, as shown by the extracted factors. The goal when extracting factors is to remove as much common variance in the first factor as possible (Child, 2006; Hair et al., 2014)

- Specific variance or unique variance: refers to the variance associated with only a specific variable. It cannot be explained by correlations to other variables but is associated with a single variable (Hair et al., 2014)

- Error variance: refers to the unreliability of the variance when it cannot be explained by correlations to other variables (Child, 2006; Hair et al., 2014)

The total variance of any factor consists of its common, unique and error variance. The percentage of variance is based on having a specified cumulative percentage of total variance which is extracted by successive factors. The purpose of the percentage of variance is to make sure that the extracted factors are significant by ensuring that they explain a specified amount of variance. In the social sciences, it is recommended to have a total variance explained > 60% (Gaskin, 2012c; Hair et al., 2014). The total variance explained for this study is 83.4% which is above 60%. (refer to appendix V).

5.3.1 Reliability

This refers to the assessment of the degree of consistency between the multiple items of a construct. It is a reliable set of variables if it will consistently load on the same construct. Reliability is tested in exploratory factor analysis by computing Cronbach's alpha for each construct or factor. It is recommended for factor reliability that the threshold for Cronbach's alpha should be above 0.7 (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). After the extraction of the factors, Cronbach's alpha in each case is shown below and at the top of the pattern matrix. All alphas were above the recommended threshold of 0.7 for factor reliability (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994) (refer to appendix V).

Table 6: Cronbach's Alpha for items

Item	Assessment	Effectiveness	Supervision	Coaching	Advising	Materia
Cronbach's Alpha	0.944	0.908	0.898	0.887	0.857	0.849

5.3.2 Validity

The types of validity that were examined in this study were the face validity, the convergent validity and the discriminant validity. Face validity means that the items that are of a similar nature are loaded together on the same construct and that they make sense. Convergent validity means that there is a high correlation between the items within a single construct; this can be noticed from the factor loadings. Having a large sample size affects the factor loading. In this study the factor loading of 0.3 is considered significant, given that the sample size was 375 respondents (Gaskin, 2012c; Hair et al., 2014). Discriminant validity refers to the extent to which the factors are distinct and uncorrelated. The rule that was followed is that the items relate more closely to their own construct than to any other construct. To examine the discriminant validity, the following methods were used in the exploratory factor analysis (Gaskin, 2012c; Hair et al., 2014) (refer to appendix V).:

- Examining the pattern matrix by checking if the variables/items were loading significantly on one construct only or if there was cross loading (in which items are loading on multiple factors)

- Examining the factor correlation matrix – the correlation between the factors should not exceed 0.7. High correlation > 0.7 means that there is a majority of shared variance (0.7*0.7 = 49% shared variance) (Gaskin, 2012a).

During the EFA some items were dropped because they failed to load conceptually with their expected construct (refer to appendix V).. Items that loaded on other items are considered poor/unreliable and were deleted from the analysis. The items of the verification construct were dropped because of cross-loadings with the assessment items and for this reason the construct is considered redundant. The similarities conceptually between the verification and the assessment items resulted in the cross loadings. In addition, the wording of some pairs of questions were similar. The hypotheses of the verification construct, H5 and H10, were not tested in the final model. All remaining loadings of the items were above the threshold of 0.3, as recommended by Hair et al. (2014) for sample sizes above 350. This indicated that adequate convergent validity had been achieved. No cross-loadings were available and no factor correlations were greater than 0.7, indicating adequate discriminant validity. With regard to the model fit, the resulting six-factor model explained 83.4% of the total variance, which was above 60% as recommended by Hair et al. (2014). The final list of items is shown below:

Table 7: Pattern Matrix for coefficients

Item	Assessment	Effectiveness	Supervision	Coaching	Advising	Material
Material_1	.059	.015	.072	-.094	-.068	**.892**
Material_3	-.088	-.047	.118	-.055	.079	**.934**
Material_6	.077	.150	-.247	.237	-.042	**.686**
Advising_2	-.213	.077	.096	-.017	**.908**	-.040
Advising_3	.217	-.058	-.137	.083	**.845**	-.068
Advising_5	.123	-.021	.047	-.037	**.788**	.130
Coaching_2	-.088	-.082	-.003	**.947**	.114	-.020
Coaching_3	.012	-.040	.119	**.824**	-.112	.128
Coaching_7F	.051	.103	.085	**.822**	-.004	-.112
Supervision_1	.020	.083	**.769**	.115	.024	-.010
Supervision_2	.073	.023	**.869**	.024	.019	-.084
Supervision_7	-.012	-.069	**.884**	.044	-.013	.126

Effectiveness_4	-.069	**.892**	.027	-.026	.078	.065
Effectiveness_5	.003	**.831**	-.081	-.023	.047	.164
Effectiveness_11F	.080	**.953**	.070	.000	-.081	-.128
Assessment_2	**.886**	.007	.068	-.051	.016	.028
Assessment_4	**.938**	.004	.052	-.042	-.003	.007
Assessment_6	**.961**	.020	-.032	.046	-.012	-.016
% of variance explained	48.183	12.721	8.547	6.039	4.342	3.545

Note. Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

5.4 Confirmatory Factor Analysis

CFA is undertaken after the exploratory factor analysis. The CFA resembles the EFA in some aspects but it is conducted to specify both the number of constructs that exist for a set of items and which construct each item will load on before results can be calculated. For this reason, this statistical technique does not assign items to constructs but instead bases the assignment on the theory being tested before any result can be obtained. In CFA, the item is assigned only to a single construct. This helps to test how far an a priori theoretical pattern of items loading on pre-specified constructs represents the actual data. Consequently, CFA helps to determine how well our theoretical specification of the factors matches reality. The researcher confirms the factor structure extracted in the EFA (Gaskin, 2012a; Hair et al., 2014) . AMOS was used to conduct the CFA (refer to appendix VI).

5.4.1 Model Fit

Model Fit helps to compare the theory to observation by testing the similarities of the estimated covariance matrix (the theory) to the observed covariance matrix.

In order to check the model fit, a range of fit indices was used, related to the absolute fit indices and the incremental fit indices.

The first fit indices that were checked were the absolute fit indices which supplied a direct measure of how well the model under study reproduced the observed data (Kenny & McCoach, 2003). It provided a basic test of how well the theory as developed fitted the sample data (Hair et al., 2014). The following measures were tested under the absolute fit indices:

- The CMIN/df: this was examined in order to check for the model fit. CMIN/Df is the minimum discrepancy $\hat{C}$ divided by its degrees of freedom. Writers have suggested this ratio as a reliable measure of fit. It is recommended that the ratios that ranges from 1-3 should be used to indicate an acceptable fit between theory and the sample size (Bohrnstedt & Borgatta, 1981). Other measures of fit that were used are as follows:

- Goodness-Of-Fit Index (GFI): the aim was to produce a fit that was less sensitive to sample size and hence N is not included in its formula. However, this statistic is still sensitive to sample size N, due to the effect of N on the sampling distribution (Maiti & Mukherjee, 1991). No statistical test is related with GFI, simply guidelines of fit (Tanaka & Huba, 1985). GFI values range between 0 and 1. The higher the value of GFI, the better the fit of the model. In the previous literature, a good model was indicated if the GFI value was greater than 0.9 (Hoelter, 1983) (Hair et al., 2014).

- Root Mean Error of approximation (RMSEA): this is one of the widely used measures which helps to correct the tendency of the X^2 Goodness of fit test statistic to reject a large number of observed variables or a large sample. The lower the value of the RMSEA, the better the fit of the model. This statistic helps to show how well a model fits a whole population, not a mere sample used for estimation (Li-tze & Bentler, 1999). Including the sample size and model complexity in its equation helps to correct the model. If the RMSEA value is < 0.05 it indicates a good model. If the value is between 0.05 – 0.1 then it indicates a moderate model and a value > 0.1 indicates a bad model (Li-tze & Bentler, 1999).

- Root Mean Square Residual (RMR) and Standardized Root Mean Residual (SRMR): The RMR is the square root of the average squared amount by which the sample covariance and variance differ from their estimates obtained under the assumption that the model is adequate. The lower the value of the RMR, the better the model (Arbuckle, 2013). The standardized residuals are deviations of individual covariance terms which do not reflect the overall model fit. In order to get the overall model fit, the overall residual value is required, which consists of the root mean square residual (RMR), the square root of the mean of these squared residuals. RMR has the problem that residuals in this case are related to the scale of the covariance. To remedy this, another option can be used, namely, the standardized value of RMR. This is useful for comparing the fit across various models. The rule is to have a low RMR and SRMR so as to have a better fit. Higher values > 0.1 indicate a bad fit (Hair et al., 2014).

The second fit indices to be checked were the incremental fit indices, which are different from the absolute indices. These help in testing how well an estimated model fits compared to a baseline model ("Null model"). A null model assumes that all the observed factors are uncorrelated, implying that no model specification could enhance the model because it contains factors which are entirely unrelated (Hair et al., 2014). The following measures were checked under this incremental fit indices:

- Normed Fit index (Banfill, Bridgwood, & Maxwell): is the ratio of the difference in X^2 value for the fitted model and the null model divided by the X^2 for the null model. NFI > 0.90 indicates that the model is good (Hair et al., 2014).

- Tucker Lewis Index (TLI): compares the normed chi-square values for the null model with those of the specified model, which to some degree takes account of the model's complexity. Models with TLI close to 0.1 have a good fit. Models with higher values of TLI suggest a better fit than others with lower values (Hair et al., 2014).

- Comparative Fit index (CFI): is an improved version of the normed fit index (Banfill et al.) (Bentler, 1990; Bentler & Bonett, 1980; Hu & Bentler, 1999). Higher values of CFI indicate better fit. CFI values > 0.9 indicate models with a good fit.

5.4.2 Modification indices

In a CFA, the researcher can't do much to fix the model by adding more regression lines as all the regression lines between latent and observed variables are there in the model. Modification indices offer a way to evaluate the potential modifications in the analysis and help in fixing discrepancies between the proposed model and estimated model. They provide suggestions which help to reduce the chi-square values. For that reason when using modification indices in CFA, it is suggested to look for modification indices for the covariances. It is suggested to covary error terms that are part of the same factor but not to covary between with observed or latent variables, or with other error terms that are not part of the same factor. Modification indices were used to correct the model fit (Gaskin, 2012a).

In this study the confirmatory factor analysis confirmed the factor structure established during the exploratory factor analysis. It also provided extra measures for the model's validity and reliability. To provide opportunities for improvement in the model, modification indices were used between the error terms of the material construct. The error term of material_1 is covaried with the error term of material_6

The table below indicates that the 6 construct model and the relationships between the constructs are confirmed as hypothesized (refer to appendix VI):

Table 8: Model Fit for Measurement Model

Metric	Observed Value	Recommended
CMIN/df	2.841	Between 1 and 3
GFI	0.914	> 0.90
RMSEA	0.070	0.05 – 0.1
RMR	0.054	< 0.1
SRMR	0.037	< 0.09
NFI	0.941	> 0.90
TLI	0.950	> 0.90
CFI	0.961	> 0.95

5.4.3 Validity

In order to check the convergent validity in CFA, the Average Variance Extracted (AVE) was calculated. This is the standardized factor loading (squared multiple correlations) divided by the number of items. The rule that was followed was that an AVE of 0.5 or higher indicates adequate convergence (Hair et al., 2014; Kline et al., 2012). The following steps were followed:

- The model fit was checked for adequacy
- The factor loadings (lambda values) were significant and above 0.3
- The Average Variance Extracted (AVE) was calculated and was found to be above the recommended threshold of 0.5 (Kline et al., 2012).

Discriminant validity was checked by means of the following tests (Fornell & Larcker, 1981):

- Checking the Maximum Shared Variance (MSV) and ensuring that it was less than the AVE. The MSV is the maximum correlation (squared covariance) with any other factor.
- Checking the Average Shared Variance (Masvawure et al.) (Masvawure et al.) and ensuring that it was less than the AVE. The ASV is the average of all correlations with other variables.
- Comparing the square root of the AVE and ensuring that it was greater than all the inter-factor correlations

Discriminant validity was tested by the following steps (Fornell & Larcker, 1981):

- Checking whether the Maximum Shared Variance (MSV) was less than the Average Variance Extracted (AVE)
- Reviewing all factors to make sure that the Average Shared Variance (Masvawure et al.) was less than the Average Variance Extracted (AVE).
- Checking whether the square root of the AVE (on the diagonal in the matrix below) was greater than all the inter-factor correlations.

5.4.4 Reliability

To check the reliability of the model, the Composite Reliability (CR) was calculated for each factor. CR is the squared sum of factor loadings for each factor/ construct and the sum of the error variance terms for a construct. The rule that was followed was that reliability at 0.7 and higher suggests good reliability (Hair et al., 2014). This measurement is more accurate than Cronbach's alpha because it does not assume that the loading or error terms of the items are equal (Chin, Marcolin, & Newsted, 2003) In all cases the CR was found to be above the minimum threshold of 0.7, indicating that the variables were reliable, as shown below:

Table 9: Construct Correlation Matrix

(the square root of the AVE is on the diagonal) (Gaskin, 2012d)

	CR	AVE	MSV	ASV	advising	effectiveness	supervision	Assessment	coaching	material
advising	0.869	0.696	0.387	0.273	0.834					
effectiveness	0.909	0.770	0.584	0.291	0.479	0.878				
supervision	0.899	0.747	0.634	0.307	0.505	0.372	0.865			
assessment	0.947	0.856	0.387	0.333	0.622	0.600	0.556	0.925		
coaching	0.889	0.727	0.634	0.305	0.418	0.381	0.796	0.529	0.853	
material	0.867	0.685	0.584	0.344	0.566	0.764	0.444	0.574	0.538	0.827

5.4.5 Common Method Bias/Variance (CMB)

Since the independent variables and dependent variables were collected by a single method – the online questionnaire – it was feared that this might introduce a systematic response bias that would either inflate or deflate the participants' answers. A research study that has significant common method variance is one in which most of the variance can be explained by a single factor. The CMB was tested to see if a method bias had affected the results of the measurement model. To check the CMB, the study used the "unmeasured latent factor" recommended by Podsakoff, macKenzie, Lee, and Podsakoff (2003) for studies which do not explicitly measure a common factor. In the present study this test was conducted by subtracting the standardized regression weights after adding the Common Latent Factor (CLF) from the standardized regression weights after drawing the CLF. If a great difference appeared between the standardized regression weights before and after (e.g. a difference greater than 0.2) then the CLF would be retained in the measurement model before moving to the structural model (Gaskin, 2012a; Podsakoff et al., 2003). In this research, the data for the independent variables and dependent variables were collected at the same time using the same instrument, namely, an online survey. Hence, it was thought advisable to conduct a common method bias test to check whether a method bias was affecting the results of our measurement model. The test used was the common latent factor (CLF) method recommended by MacKenzie and Podsakoff (2012). This test was recommended for the present study because no common factor was measured and no theoretical marker variable was collected. A variable is considered a marker variable if it is theoretically not related to any of the other items (MacKenzie and Podsakoff (2012). The test was conducted by comparing the standardized regression weights before and after adding the CLF. The results showed that none of the regression weights was affected by the CLF (i.e. the deltas were less than 0.2) and the CR and AVE for each construct still complied with the minimum thresholds.

5.4.6 Invariance Test

An invariance test was conducted in this study in order to test what is indicated by Grow (1991) regarding the change of the teacher's role according to the trainee's stage of learning in self-directed programs. Furthermore, the type of coaching could change from hands-on, used for new trainees, to hands-off methods, used for more experienced trainees (Parsloe, 1995). The aim of the test was to see if the trainees who had recently started the program and the trainees who were due to complete the program were different. If differences were detected, it might indicate that the trainees' opinion regarding their coach changed according to their learning stage.

In order to ensure that there were no differences between the groups in the model (i.e. trainees who had spent less time on the CAMS program and trainees who had spent more) a configural, metric using chi-square and a metric using the multigroup moderation test were employed. In the configural test, an adequate model fit is required when the two groups are tested together. After getting a good result in the configural test, a metric using the chi-square test was conducted. This test consisted of taking the chi-square difference between the two groups. If the p-value was not significant, then the difference between the two groups was negligible. The final test, the metric using multigroup moderation, was performed by using the critical ratios for the differences in AMOS. If the p-value was not found to be significant then the groups were not held to be different (Gaskin, 2012a).

Configural, metric and multi group moderation tests for invariance were conducted. These tests were chosen to help to discover whether the two groups were different. The first group consisted of trainees who had spent 1-2 years on the CAMS program and the second group contained trainees who had spent 3-4 years on the program.

In order to conduct the configural test, first the regression weights of the two groups are forced to be equal (In AMOS, this means the unstandardized estimates are equal) before the model fit of the two groups is checked. The model had adequate fit (cmin/df = 1.4; CFI = 0.981). The term 'adequate fit' means that the model is configurally invariant. After constraining the model to be equal, the chi-square difference test was found to be non-significant (p-value >0.05), indicating that the model met the criteria for metric invariance across the two groups. The last test was metric, using the multigroup moderation test. After looking at the critical ratios of the differences, the p-value was found to be > 0.05 which means that the groups were invariant. It seems that the trainees' opinion of the coach did not change according to the learning stage.

5.4.7 Multivariate Analysis

- Linearity

Linearity: this refers to a reliable slope of change in the relationship between the dependent variable and the independent variable. If the relationship is inconsistent, then this will affect the structure equation modelling analyses (Gaskin, 2012b)

Linearity was tested using the curve estimation in SPSS for all the direct effects in the model. The results showed that all the relationships between the variables were sufficiently linear and the p-values of the curves estimation were significant. This indicated that all the relationships can be tested using a covariance based structure equation modelling algorithm such as the one used in AMOS (refer to appendix VI).

- Homoscedasticity

Homoscedasticity: this involves the assumption that the dependent variable(s) shows equal levels of variance across the range of independent variable(s). This means that the variance of the dependent variable being explained in the dependence relationship should not be focused on in only a limited range of the independent values.

In order to test if there was homoscedasticity, a scatter plot was drawn of the regression standardized residual and the regression standardized predicted value. The result showed that there was a consistent pattern, a good result pointing to homoscedasticity (refer to appendix VI)

- Multicollinearity

Multicollinearity: this means that the independent variables in the model are highly correlated with each other. In order to check this, the Variable Inflation Factor (VIF) for each independent variable (a multivariate regression using one of the independent variables as the dependent variable) and then regressing it on all the remaining independent variables. After that, the independent variables can be swapped one at a time. The following rule for VIF will be used: (Gaskin, 2012b)

- VIF < 3: it is a reliable value
- VIF > 3: it is a potential problem

- VIF > 5: it is very likely a problem
- VIF > 10: it is beyond question a problem

The Variable Inflation Factor (VIF) was calculated for all the exogenous variables simultaneously. The calculated VIFs for all variables were less than 10, which indicated that all the factors were distinct in their causal effect (Hair et al., 2014) (refer to appendix VI).

5.4.8 Structural Model

The full hybrid model was used and the model was shown to have adequate fit, that is, within the acceptable thresholds, as shown below (refer to appendix VII):

Table 10: Structural Model Fit Summary

Metric	**Observed Value**	**Recommended**
CMIN/df	2.879	Between 1 and 3
GFI	0.912	> 0.90
RMSEA	0.071	0.05 – 0.1
RMR	0.069	< 0.1
SRMR	0.0451	< 0.09
NFI	0.94	> 0.90
TLI	0.949	> 0.90
CFI	0.960	> 0.95

The standardized results of the final structural model are listed below in Table 11. H7 and H11 were not supported due to p-values >0.1. From the trainees' feedback, it seems as though the supervisor was loaded as giving too little time to follow the trainees' progress:

> *"Supervisors are engaged in real tasks that take a considerable amount of time and effort, thus leaving no time for reviewing progress"*

> *"My supervisor is mostly busy and he meets with me if I have an issue or request to meet with him. It is better to have two supervisors. If one is busy, the other can help instead"*

With regard to the advisor, it seemed as though the advisor in some cases did not have the same professional background and was not taking time to follow up regularly, as stated below:

> *"I worked in CAMS without continuous follow-up from my advisor"*

> *"Sometimes the Advisor has little or no idea of the job I will be handling. For example, I am in Engineering and my advisor is from a finance background, and is well over 60 years old"*

> *"I need more follow-up from the advisor"*

It was suggested by the trainees that the supervision and advising processes should be improved:

"Although the supervisor is always supportive, he is also busy and overloaded due to the huge number of CAMS employees and other side jobs. There should be an advisor

in every department who has fair knowledge of both MD and the technicality of the job, to best direct trainees and assign their courses properly at the right time"

"Having an MD advisor with a similar professional background is better than having an advisor without. Communication and understanding will be easier if he is from the same background"

"The advisor also needs to be trained to offer the best supporting techniques

H8 in its original form was not supported because β = -0.196 which is in a negative direction but the p-value was < 0.05, which means it was significant. From the trainees' feedback, it seems as though the competency model requires the trainees to depend on themselves more and depend less on help from the coach (Fletcher, 2000; Leuro & Kruger, 2012):

"Answering the assignments is mostly the responsibility of the employee him/herself"

"It all depends on the individual"

"Everything depends upon my attitude toward learning"

"The coaching process is usually self-determined"

In addition, it seems that the coach was overwhelmed with his job duties, which prevented him from giving enough attention to the trainees, as stated below:

"The coach isn't available all the time because of his workload"

"In the beginning there was no coaching process but later on it was improved"

"My coach is good, but he has many other jobs and responsibilities since he is involved in a major project and has deadlines"

All the remaining hypotheses were supported. From the trainees' feedback, the satisfaction level seemed high when concerned with the material and the content of the competency-based model:

"Both the content and the materials are very well chosen and written"

"Real work is the main driver for gaining a better understanding of the material in hand. CAMS helps you explore the other disciplines related to your particular tasks"

Overall, the trainees were content with the program but still suggested ways to improve it:

"I have learned a lot through the program. It just needs guidance on how to start, manage and understand how the program is related to the job"

"Have a better implementation process for the program that links the real work with the program; and update the program to reflect the job tasks"

"It is advisable to review and update the program from time to time"

"The program needs to be revised and updated regularly"

"The program needs to be updated to match the new job description and job duties"

"There is a need to have CAMS programs for new positions to reflect the new job duties"

"The CAMS program should be relevant to the duties of the job as much as possible"

"In general, the CAMS program is good, but I think it requires a clear explanation of its content and material in order not to be delayed and get a red flag. I strongly

recommend someone from the same specialty to explain the CAMS in detail (not depend on other trainees)"

The table below shows the overall findings concerning the original hypotheses:

Table 11: Data findings for the research hypothesis

Hypothesis	Path	Path Coefficient	Remarks
H1	Competency model design → Perceived Effectiveness of competency model	0.715***	Supported
H2	Competency model design → Supervision process	0.467***	Supported
H3	Competency model design → Coaching process	0.552***	Supported
H4	Competency model design → Assessment process	0.587***	Supported
H6	Competency model design → Advising process	0.578***	Supported
H7	Supervision process → Perceived Effectiveness of competency model	0.074	Not supported

H8	Coaching Process → Perceived Effectiveness of competency model	- 0.196**	Significant but not supported
H9	Assessment process → Perceived Effectiveness of competency model	0.286***	Supported
H11	Advising process → Perceived Effectiveness of competency model	- 0.072	Not supported

Note. Significance at the *p<0.10, **p<0.05, ***p<0.01 Levels

The figure below shows the final model along with the path coefficients extracted and the adjusted R-square scores.

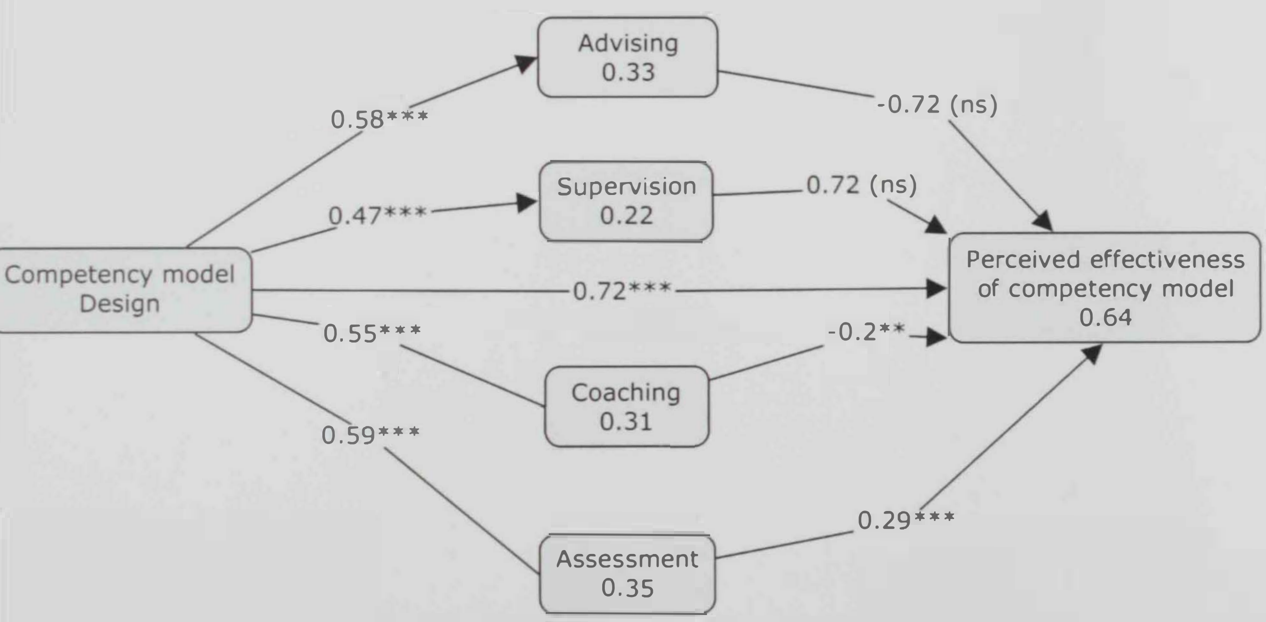

Figure 3: Final structure model

Summary

This chapter provided the data analysis which was conducted to answer the research questions and to ascertain the validity of the research hypotheses. The data were first screened in order to clean them from any missing or unengaged responses, then EFA was conducted to explore whether each item was loading under the right construct. Next, CFA was performed to confirm the factor structure and finally the full hybrid model was created. Validity and reliability were checked during the EFA and the CFA. Most of the hypotheses were supported, except for H7 and H11. H8 was supported but in the opposite direction to our original hypothesis. The explanations and details are discussed further in the following chapter.

Chapter 6: General Discussion and Conclusion

This chapter summarizes the findings of the data analysis and then develops conclusions from them. Its practical and academic implications are discussed, with an emphasis on the limitations of the study. Finally, suggestions for future research are highlighted.

6.1 Goal of the Study

This research set out to study the factors that make the competency model effective from the perspective of trainees who are undergoing or who have completed a competency program in an oil company. The perceived effectiveness of the competency-based model refers to the perceived level at which the competency model reaches its intended objectives/goals or expected outcomes (Paek, 2005). In order to study the factors that make the competency model effective, hypotheses were constructed and a data model was developed using the competency model design and its effect on the work environment variables and perceived effectiveness of the competency model. In addition, the model looked at the effect of the work environment variables on the perceived effectiveness of the competency model. The competency model design consists of the competency model goal, relevance of its content and material to the trainees' job. The work environment variable is mainly the supervisory support. The supervisory support is complemented by other supporting roles in the competency model, i.e. the coaching, assessment, verification and advising processes. A questionnaire was formulated to measure how these factors affected the perceived effectiveness of the competency model.

The data sample, after removing 10 cases of missing data responses, consisted of 375 trainees. Then the data were analyzed using structural equation modeling. The final model was found to fit within the acceptable thresholds.

6.2 Contributions to Literature

This study contributes to the literature by providing an insight into the factors that make the competency model more effective than traditional training methods. There is a gap in the literature with regard to evaluating such models (Burnett et al., 1998; MacGraw & Peoples, 1996) and this study explored the factors that makes the program effective from the perspective of trainees. These factors are, first, the design of the competency model, i.e. its goal and the relevance of its content and material to the trainees job. The second factor is the assessment process and the provision of minimal/no coaching which are part of the work environment variables. This study looked at the effect of the competency model design on the work environment variables and perceived effectiveness of the competency model. Furthermore, it looked at the effect of the work environment on the perceived effectiveness of the competency model.

6.3 Summary of the Findings

Table 12: Summary of the hypotheses being tested

Hypothesis	Path	Path Coefficient	Remarks
H1	Competency model design → Perceived Effectiveness of competency model	0.715***	Supported
H2	Competency model design → Supervision process	0.467***	Supported
H3	Competency model design → Coaching process	0.552***	Supported
H4	Competency model design → Assessment process	0.587***	Supported
H6	Competency model design → Advising process	0.578***	Supported

H7	Supervision process → Perceived Effectiveness of competency model	0.074	Not supported
H8	Coaching Process → Perceived Effectiveness of competency model	- 0.196**	Significant but not supported
H9	Assessment process → Perceived Effectiveness of competency model	0.286***	Supported
H11	Advising process → Perceived Effectiveness of competency model	- 0.072	Not supported

Note. Significance at the *p<0.10, **p<0.05, ***p<0.01 Levels

As shown in the summary of the hypothesis testing in the above table, the dissertation provides empirical evidence. First, the competency model design (i.e. its goal and the relevance of its content and material) has a positive effect on the work environment variables (which consist of the supervision process, the coaching process, the advising process and the assessment process) and the perceived effectiveness of the competency model. Second, the supervision process and the advising process from the work environment variables do not affect the perceived effectiveness of the competency model. Third, the factor from the work environment that has an effect is the assessment process, which has a positive effect on the perceived effectiveness of the competency model. Fourth, the coaching process, one of the work environment variables has a negative effect on the perceived effectives of the competency model, according to the perception of the trainees.

6.4 Interpretation of the Results

The perceived effectiveness of the competency model is affected by the following factors:

1. The design of the competency model i.e. its goals and the relevance of its content and material to the trainees' job
2. Work environment factors, namely, the assessment process and provision of minimal/no coaching.

As with studies of traditional training (Indria, 2008), the competency model design affects the trainees' reaction to/satisfaction with the effectiveness the program. The competency model design has the strongest positive impact on the perceived effectiveness of the competency model (i.e. H1, with 0.715***). The literature emphasized the importance of designing appropriate traditional training because it appropriateness has an effect on effectiveness (Alvarez et al., 2004). The same was assumed for the competency model design, an assumption supported in this research. This means that when a Subject Matter Expert (SME) designs a competency model, he/she needs to ensure that the program is aligned with the organization's objectives. SMEs need to identify the core competencies required at the organizational level and also at the job level (Mukherjee, 2011). This will help companies to succeed against their competitors, giving them competitive advantage (Prahalad & Hamel, 1990). The content and material should be related/relevant to the job tasks required from the trainee if he/she is to become a superior performer/competent (Mukherjee, 2011). In traditional training, if the program is not designed properly the transfer of training to the job could be affected (Holton, 1996; Yasin et al., 2013). This does not apply to the competency model because all the content and material are about the job that the trainee is going to perform (Lucia & Lepsinger, 1999). If the program is not designed in the right way (if the behavior indicators or competency clusters are not relevant to the trainees' job), then not only will the trainee's learning be affected only but also he/she will be unable to perform his/her targeted job. This explains why this construct is one of the important factors for ensuring the success of the model in any company (Al Matroushi, 2004; Al Matroushi et al., 2008).

The competency model design has an effect on the work environment variables. The research results support the view that the competency model design affects all the other roles/processes I the work environment that support the employee in the competency model; i.e. the supervision process (H2), the coaching process (H3), the assessment process (H4) and the advising process (H6). The reason is that when the competency model is implemented in the organization, the SMEs need to ensure that the pre-defined competency model design is clear, unambiguous, logical and simple in structure, and relevant in content and material to the trainees' job tasks (Lucia & Lepsinger, 1999; Mukherjee, 2011; Whiddett & Hollyforde, 2008; Whiddett et al., 2003). This will help supervisors, coaches, advisors and assessors to give the right feedback to trainees and unify their sets of objectives and sense of what is required from the competent trainee (Lucia & Lepsinger, 1999). Supervisors will be able to install the right Personal Development Plan (PDP) by linking the competencies required in the program to the trainees' work (Lucia & Lepsinger, 1999). Coaches will be able to become better facilitators (Lucia & Lepsinger, 1999). Assessors will better understand the cluster of competencies and the behavior indicators. Then they will be able to assess the trainees efficiently to help them become superior performers. (Fletcher, 2000; Lucia & Lepsinger, 1999).

Trainees supported the data analysis results that the competency design with regard to the content and material exposed them to other job disciplines, which helped them to widen their knowledge. Trainees were recommended to always update the competency model with regard to its behavior indicators and competency clusters so that it was related to their work duties in particular when they took on additional duties. When new positions are introduced, the competency model needs to be updated to match the requirements of each one.

The aim of implementing competency models in all companies is to ensure that employees are competent (Davidson & Al Zadjali, 1999; Fletcher, 1997; Novia & Fernandes, 2014). For this reason, the role of the assessor is important because he is the one who judges if the evidence provided by the trainees is enough to rate him/her as competent. Assessment is not easy because trainees are assessed against pre-defined standards set by the company (or the industry, if available). Rating trainees as competent is a responsibility and a challenge because the assessors need to ensure that the trainee can do the work independently without a supervisor or help from peers (Davidson & Al Zadjali, 1999;

Fletcher, 1997; Novia & Fernandes, 2014). Assessors need to observe candidates while performing the work; this is part of the evidence (Al Matroushi, 2004; Al Matroushi et al., 2008).

In this study, the hypothesis is supported that the assessment process from the work environment variables also affects the perceived effectiveness of the competency model. If assessment is used to evaluate the effectiveness of traditional training/education, as stated by Praslova (2010), then it also can be used to evaluate the effectiveness of the competency models, a conclusion which is supported by the results of this study. Assessing the trainees' skills and knowledge under the competency model makes the program effective from the standpoint of the trainees. The reason is that the trainees have complete access to the statements of their competencies, the precise outcomes they are expected to achieve, including the standards by which they will be assessed; this gives learners a degree of control over their own learning (Cotton, 1995; Parsloe, 1995). The above shows why competency assessment was found to be the second most important factor in successful competency models in oil and gas companies (Al Matroushi, 2004; Al Matroushi et al., 2008; Dordan, 2014; Leuro & Kruger, 2012, 2014).

6.5 Reasons for Non-Findings

In traditional training, supervisors' support, one of the work environment variables, is an important factor to measure because of its impact on the effectiveness of training (Baldwin & Ford, 1988; Fishbein & Stasson, 1990; Noe & Schmitt, 1986). Without the support of the supervisor, the transfer of training by trainees is hindered (Lim & Morris, 2006; Martin, 2010). Yet in competency training, support from supervisors has no effect on the perceived effectiveness of the competency model (H7, 0.047, NS). The reason, as indicated by the trainees, is that the supervisor is overloaded with work and does not have enough time to follow the trainees' progress. Trainees suggested that each of them should have more than one supervisor so that if one were busy the other supervisor could help them.

The role of the advisor is specific to the oil and gas company under study. He/she ensures the that the assessment standards are applied by the assessors and verifiers. In addition, he/she ensures that the trainees progress is followed by the coach and mentor. He/she ensures that the trainee is progressing in the program (Al Matroushi, 2004). This research did not support the effect of the advisor on the perceived effectiveness of the competency model (H11, -0.072, NS). The reason, as indicated by the trainees, is that they could progress on the program without the support of the advisor. Some trainees also reported that they were not getting the right support because the advisor did not come from the same background as theirs. Trainees suggested that the Manpower Development Department (MD) in the company should employ more advisors to take care of each job discipline instead of having advisors who handle a range of disciplines at the same time. If it did, the advisor would have fewer trainees and would follow them up better.

The unexpected result in this study is the negative effect of the coaching process from the work environment on the perceived effectiveness of the competency model, that is, if there had been no coaching or less coaching the program would have been perceived as more effective by trainees. Its negative effect is different from that of traditional forms of training. As indicated by the trainees, the reason was that the coach was short of time because he/she had other work responsibilities and was overloaded. The question that then arises is "If the coach is not providing the needed support to trainees, why do they still perceive the competency model as effective?.

Different causes may be conjectured for this result. According to the literature, some factors could encourage trainees to go through a process of self-directed learning, namely, support from peers, motivation to learn and self-efficacy (Boyer et al., 2014). Although it is not within the scope of this research to study the effect of peer support on the perceived effectiveness of the competency model, the first reason was found, from the trainees' feedback, to be the support that they were getting from their peers during the program. From the literature review, support from one's peers in traditional training helps to implement the newly learned skills back on the job and after the training changes the trainees' behavior at work (Bates, 2003; Colquitt et al., 2000b; Homklin et al., 2013; Tracey & Tews, 2005). It seems that the same happens with the competency model. The peers who have gone through the program can guide their colleagues who are still on the program when the coach is busy.

The second reason may be the high levels of self-efficacy among the trainees under study. This was indicated from the feedback of the trainees, which endorses this view: they felt that their development through the program was their responsibility and depended on their input, and also on their attitude to the learning experience; but it did not lie with the coach. Self-efficacy is the trainees' belief in their own capacity/competence to do the needed work at the required level of performance (Bandura, 1995). Trainees with high self-efficacy are efficient in traditional training and understand its positive impact. They have a positive reaction to changing their behavior or attitude when they go back to the job (Switzer et al., 2005). Self-efficacy is self-developed and it cannot be enforced by anyone else (Hudson, 1999). Obviously, then, self-efficacy is not correlated to coaching (Bozer et al., 2013; Wakkee et al., 2010), though it can be enhanced by coaching (Joyce & Showers, 1980), although the trainee needs to trust the coach first (Malone, 2001). This may be related to the adult learner principles mentioned in the literature by Knowles et al. (2012) and the fact that the competency models are learner-centered (Brunt, 2007). It should be clear from the literature that the responsibility for the development of the program belongs to the trainee (Leuro & Kruger, 2012, 2014). The coach acts only as a facilitator, not a problem solver, and the more he/she lets the trainees try things for themselves on the job, the more the trainees can learn alone (Gallwey, 2000). It seems that coaches in the oil and gas company under scrutiny understood the adult learning principles and were trying to let the trainees take ownership of their learning. This is reflected in the complaints from the trainees, who claimed that their coach was not giving them enough time. Further analysis was conducted in this research in order to check if the trainees who had spent 1-2 years on the program had a different opinion about the coach from the trainees who had spent 3-4 years on the program. As indicated by Grow (1991), in self-directed learning the teacher's role changed according to the trainee's learning stage. In addition, the type of coaching could change from hands-on, used for new trainees, to hands-off methods used for more experienced trainees (Parsloe, 1995). No differences were found between the two groups of trainees.

In this study, the effect of the competency model design on the trainees' perception of the effectiveness of this model was supported. However, the effect of the competency model design on the motivation of trainees was beyond the scope of the study. The third reason could be trainees' motivation. From the literature, it seems that companies focus on the design of traditional training because of its effect on trainees/motivation (Bell & Ford, 2007; Clark et al., 1993; Klein et al., 2006; Nease, 2000; Seyler et al., 1998; Tai, 2006). Training motivation affects the relationship between the characteristics and the effectiveness of the training. The training characteristics that affect training motivation are training design, the relevance of the content to the job of the trainee, the relevance of the content to the trainees' career needs/personal needs. Traditional training design could result in a high motivation to learn among trainees (Noe, 2013). An example of training design characteristics that affect training motivation is reward (Whitehill & McDonald, 1993). The relevance of traditional training to the trainees' job requirements (Clark et al., 1993), will help to improve the trainees' performance (job utility) and consequently their training motivation and transfer of training (Nikandrou et al., 2009). The other factor that affects trainees' pre-training motivation is the relevance of the training to the their career needs (Noe (1986). The last factor that affects motivation is the relevance of the training to the trainees' personal needs. This factor is made up of three expectations from the trainees. First are the expectations of the trainee after attending the training (i.e. salary adjustment, grade promotion or recognition) which is referred to as the extrinsic motivation factors. Second are the expectations from being part of the training program which will help to increase the trainees' skills, called intrinsic motivation factors. Third are the expectations of performing well in the training program and thus approaching the targeted outputs. This will then affect the trainees' motivation to learn (i.e. the training program utility and trainees' perceptions of the training) (Tsai & Tai, 2003). Without motivation, it would be difficult to expect the trainees to transfer the training to their jobs. For this reason, self-efficacy and the transfer of the training relationship are mediated by the motivation to learn and the motivation to transfer (Wen & Lin, 2014b).

In the competency model, trainees' career needs/ personal needs are met by gaining the required knowledge and skills required to perform their jobs and even be prepared for higher jobs. This satisfies the intrinsic motivation factor. When it comes to extrinsic motivation, trainees undergoing the program get a grade and salary adjustment by completing each assessment (Al Matroushi et al., 2008). At the end of the program, the trainee will be considered a fully-fledged employee who can perform the job tasks independently , according to the Competence Assurance Management System (CAMS), 2009 "New Professional Program,")(Al Matroushi, 2004; *Competence Assurance Management System (CAMS)*, 2009; "New Professional Program,"). All these four reasons may show why trainees are motivated to continue on a program without the support of the coach. Previous studies, in the same way, found that a focus on setting training objectives and rewards will enhance self-efficacy and increase trainees' motivation to learn and to transfer (Wen & Lin, 2014a). The reaction of trainees to the traditional training shows that motivation affects training effectiveness (Baldwin et al., 1991; Bell & Ford, 2007; Cannon-Bowers et al., 1995; Kontoghiorghes, 2004; Mathieu et al., 1992). Since competency models focus on intrinsic motivation factors and extrinsic motivation factors, this leads to the trainees' positive reaction to the competency model, regardless of minimal coaching.

6.6 Limitations and Future Directives

A possible limitation of this research is that its participants were employees who were in their first posts in the company and it had a sample of only 375 trainees. In addition, the study was conducted in a single oil company and the results cannot be generalized to other contexts where a similar program is implemented (Silverman, 2010). It would be interesting to see if the results changed if the data were collected from different companies and from a range of employees across the entire hierarchy of a company. The data collection method was self-report by trainees answering the questionnaire and their answers may be impacted by social desirability bias either to exaggerate or not reveal their real feelings (Mooi & Sarstedt, 2011). The trainees' characteristics i.e. self-efficacy and motivation effect were not within the scope of this study. In addition, the peer support from the work environment variables was not looked at, being beyond the scope of this study. These factors were not investigated as part of this study because they are not under the company's control (Buckingham & Coffman, 2007; Knyphausen-Aufseß et al., 2009; Lionetti, 2012). This study did not look at the characteristics of the supervisor, coach, advisor, assessor or verifier that might make the program effective. Moreover, this study looked only at the reaction of the employees, the Kirkpatrick first level of evaluation, and did not consider the other three levels. Finally, in the data analysis, the full set of items under each construct was not used. 30 items were removed and only 18 items remained because of cross loading with other items.

Future studies may be recommended to consider the trainees' characteristics in the model, in particular the effect of self-efficacy and motivation on the perceived effectiveness of the competency model to see if it differs from traditional training. They might also investigate the effect of the work environment variables (the supervision process, advising process, coaching process, assessment process and verification process) on the trainees' characteristics, i.e. self-efficacy and motivation and on their perception of competency model effectiveness and also compare the results with those of traditional training. The other areas that could be investigated further are the characteristics of assessors that make the program effective from the perspective of trainees. In addition, they might consider collecting the data from local and international organizations that are implementing competency model.

6.7 Implications

6.7.1 Theoretical Academic Implications

This study looked at the factors that make the competency model effective from the perspective of trainees. The factors that need to be considered when studying traditional training is mentioned in the literature but little information is provided when it comes to competency models. This study supports the positive effect of the competency model design on the work environment variables and the perceived effectiveness of the competency mode. The assessment process from the work environment has a positive effect on the perceived effectiveness of the competency model. The coaching process from the work environment has, however, a negative effect on the perceived effectiveness of the competency model.

6.7.2 Practical Implications

This study is beneficial to HR managers, consultants and policy makers by shedding light on the factors that are most important when designing a competency model, i.e. those which relate the content to the trainees' job. The competency model consists of a cluster of competencies and behavior indicators. Subject matter experts need to identify the core competencies of the organization and ensure that the behavior indicators are written in easy and clear language. They should ensure that the competencies and behavior indicators are relevant to the work of the trainees. As indicated by Alvarez et al. (2004), the design of traditional training has an effect on training effectiveness. It is demonstrated in the present study that the design of the competency model influences its perceived effectiveness. Furthermore, a traditional training design has an effect on the transfer of learning and the motivation of trainees (Aziz & Ahmad, 2011; Blume et al., 2010; Burke & Hutchins, 2007; Hutchins, 2009). This applies to the present study also because the competency model was still perceived as effective regardless of the negative coaching effect. The second factor to incorporate is the assessment process. This process is carried out in a one to one session between the assessor and the trainee. In the oil company where the present study was based, the trainee initiates the assessment process. He/she informs his/her coach and assessor in advance. The assessor asks the trainee for evidence and goes go through it all to judge whether the trainee as competent or not. Failing to make a proper assessment will affect the trainees' perception of the program's effectiveness (Whiddett & Hollyforde, 2008) as the present study shows. The third factor is the principle of minimal/no coaching. The downside of too much coaching of adults is that, according to adult learning principles, it cannot keep their attention (Knowles et al., 2012). If adults are forced to learn they will resist. Adults feel that it is their right to make their own decisions regarding their learning, which part of their "self-concept". For this reason, the competency model is a self-directed program where coaches only facilitate and encourage trainees to be self-teachers and take ownership of their learning.

SPEs need to be trained to design the best competency models because failure in developing the program will affect the whole learning cycle. In addition, assessors need to be aware of the assessment standards available in the industry and ways of gaining qualifications. Since the assessment in the competency model is evidence based and the assessor is going to judge the evidence, the assessor should be trained to carry out such assessment. Appropriate training should be provided for assessors so that they can properly judge the evidence shown by the trainees and rate them as competent or not. In the studied oil company, The standard of assessment is based on the British and Scottish National Vocational Qualification standards to ensure the implementation of a unified process (Al Matroushi, 2004; Competence Assurance Management System (CAMS), 2009).

It is important to hold awareness sessions for the trainees, to remind them that they should take charge of their program as owners, without waiting for sanction from a coach. According to the principles of adult learning and self-directed learning, adults like to control decisions to do with their learning and hence these sessions will remind them of their role in the competency model so that they can to complete their learning successfully.

The coach's role is to guide the trainee in his/her learning journey, helping only by facilitating but not taking the ownership away from the trainees. For this reason, when implementing the competency model, the focus is suggested to be on the trainee not the coach. A range of studies has been made to gauge the effect of the competency model on job satisfaction (Mahmood et al., 2014) which resulted in positive correlations being observed with the service quality, safety and attrition rate. Another study looked at the relationship of this model with the company's KPI (Leuro & Kruger, 2012), in which a positive relationship was found between competency management processes and employees' job satisfaction. But as far as the researcher knows, no study has been undertaken in this company to discover which factors make the competency model effective from the perspective of the trainees. This study clarifies the important factors for successful implementation, not only in the oil and gas companies which are implementing competency programs but also in other sectors which are interested in applying similar programs.

This study could contribute to the UAE's Vision 2030, which states that the country needs to invest in employees' vocational training in order to upgrade the skills of UAE nationals and raise their productivity ("Economic Vision 2030," 2012). In addition, this research contributes to the National Qualification Authority, a new initiative by the UAE, which will issue a framework for a qualification to be called the QFEmirates. The authority will establish the standards for this qualification in vocational education. The QFEmirates framework will be aligned with international standards in the form of the EQF. Competency models can be designed within the company or adopted from those of the QFEmirates when it is finalized. Thus the authority can benefit from this study by asking companies to focus on the factors that will help them to implement the competency model effectively.

Organizations in the UAE can then have their own developed competency models, linked to the national qualification standards. Focusing on the competency model design, the assessment process and/minimal/no coaching will contribute to attaining the above goals for competency.

6.8 Conclusion

The need for a competent workforce will continue to be felt in the oil and gas industry. One method for having competent employees is to implement competency based models. For successful competency models, as the present study suggests, it is vital to set clear, specific goals and content, together with material relevant to the trainees' job; a reliable and valid assessment process to ensure the competency of the employees; and finally, coaches to facilitate and guide the trainees but leave the ownership of the development to them. The processes and standards should be understood by all those involved in the program. This study has made a contribution by identifying the factors that make the competency model effective from the perspective of trainees.

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Appendix

Appendix I: Evaluating the Effectiveness of Traditional Training and Development Programs

Different models can be used to evaluate the effectiveness of training programs. The first model is Kirkpatrick's framework. The model consists of the following measures (Kirkpatrick, 1979):

- Reaction: assessing trainees' reaction to the training program. This could include the quality of the training and it relevance.
- Learning: it is an indicator of the acquired knowledge, skill and attitude by participants during the training.
- Behavior: to what degree trainees are applying the learned skills and knowledge in their job.
- Results: outcomes which occur as a result of the training program and subsequent reinforcement.

Kaufman and Keller have suggested adding an additional four levels to Kirkpatrick's model which are (Kaufman & Keller, 1994):

- Trainee satisfaction and societal contribution
- In the process of needs assessment and planning, evaluation should be included
- Identification of the desired or expected results.
- Availability and quality of resources and efficiency of their use

Another model used for evaluation is the CIRO (contents/contexts, inputs, reaction and outcomes) model which was proposed by Warr et al.. This model measures training effectiveness by using the CIRO elements before and after the training program. The CIRO model helps in measuring managerial training programs, the effectiveness of objectives (contexts) and training resources (inputs) (Warr, Bird, & Rackham, 1970).

Another model which shares similar aspects of the CIRO model is the CIPP (context, input, process and product) model which was proposed by Sufflebeam. The CIPP model consists of the following (Roak, Kim, & Mupinga, 2006):

- Context: gives situational data to decide the training objectives

- Input: identifies the strategies required to achieve the outcomes
- Process: covers program implementation
- Product: includes evaluation of outcomes value and degree of effectiveness

Kirkpatrick's model was used for training evaluation for three decades but Phillips' ROI (return-on-investment) model received the same attention in organizations. This model consists of the four levels of Kirkpatrick with an additional fifth level which is ROI used to measure the success in areas of Human Resource function. The ROI compares the monetary benefits as a result of the training program against the training costs (Chmielewski & Phillips, 2002).

The six-stage model was introduced by Brinkerhoff to evaluate training which consists of (Brinkerhoff, 1989):

- goal setting
- program design
- program implementation
- immediate outcomes
- intermediate or usage outcomes
- impacts and worth

Brinkerhoff's model adds two preliminary levels to Kirkpatrick's model, this provides formative evaluation of training design and training needs (Holton & Naquin, 2005).

Bushnell's IPO (Inputs, Process, Outputs/Outcomes) model considers evaluation as a recurring/cyclical process (Bushnell, 1990). This model first measures the input factors that could affect the training program's effectiveness such as program design, trainers' qualifications and trainees' qualifications. It then, it analyses the process factors of creating, developing and delivering the training program. The last step is to evaluate the results, and this consists of output (shot term results) and outcomes (long term results) (Bushnell, 1990). Outputs focus on trainees' reactions, performance or improvement, and outcomes focus on business results (Russ-Eft, Bober, Teja, Foxon, & Koszalka, 2008).

Another model introduced by Holton is the HRD Evaluation and Research Model which includes three outcomes levels (Holton, 1996):

- Learning

- Individual performance
- Organization

Holton argues that these categories are affected by primary factors such as ability, motivation and the training environment. The secondary factors are the ones that affect the motivation to learn (Holton, 1996).

The Success Case Method (SCM) model proposed by Brinkerhoff can help in answering the following questions (Brinkerhoff, 2003):

- What is really happening?
- What results, if any, is the program helping to produce?
- What is the value of the results?
- How could the initiative be improved?

Answering the above questions will give the required information related to the way a new innovation is being used, the useful outcomes of a new training program or any changes needed in the organization units that are using a new tool. The main usage of the model is to formulate judgments about the value of any performance improvements in the organization (Brinkerhoff, 2003).

A study by Chartered Institute of Personnel and Development (CIPD) has looked at the methods that UK organizations follow when evaluating their training programs and how the training contributes to the organization's strategic value. The results of the study showed the following measures(CIPD, 2010):

- Learning function efficiency measures.
- Key performance indicators and benchmark measures.
- Return on investment measures.
- Return on expectation measures.

Table I has the above-mentioned evaluation models and their evaluation criteria (Passmore & Velez, 2012).

Table I Ten popular evaluation models and their criteria

Evaluation models	*Evaluation criteria*
1. Kirkpatrick's Model	1. Reaction 2. Learning 3. Behavior 4. Results
2. Kaufman's and Keller's Model	1. Enabling and reaction 2. Acquisition 3. Application 4. Organizational outputs 5. Societal outcomes
3. CIRO Model	1. Contents/contexts 2. Inputs 3. Reaction 4. Outcomes
4. CIPP Model	1. Context 2. Input 3. Process 4. Product
5. Phillips Five Level ROI	1. Reaction and Planned Action 2. Learning 3. Applied learning on the job 4. Business results 5. Return on investment
6. Brinkerhoff's Six Stage Model	1. Goal setting 2. Program design 3. Program implementation 4. Immediate outcomes 5. Intermediate or usage outcomes 6. Impacts and worth
7. IPO Model	1. Inputs 2. Process 3. Outcomes/Outputs
8. HRD Evaluation and Research Model	1. Learning 2. Individual performance 3. Organization
9. Success Case Method	1. Evaluation focus and planning 2. Impact model creation 3. Administration of a survey to gauge success rates 4. Conduction of interviews with success and non-success instances 5. Formulation of conclusions
10. Dessinger-Moseley Full-Scope	1. Formative evaluation 2. Summative evaluation 3. Confirmative evaluation 4. Meta evaluation

Appendix II: Consent Letter

UAEU College of Business and Economics

Doctorate of Business Administration

31 March 2014

Mr. Mohamed Saeed Al Muhairi,
Vice President Human Resources,
Zakum Development Company (ZADCO),
P.O. Box: 46808
Abu Dhabi, UAE

Dear Sir,

I'm writing this letter to introduce you to one of our doctoral students, Ms. Nadya Shafeeq Al Mannaee who is conducting research on *"Determinants of competency based training effectiveness: perception of trainees"*. Ms. Al Mannaee would like to gather information from your developees by their voluntarily responding to a questionnaire that is designed to evaluate the effectiveness of competency-based model that they received during their work.

United Arab Emirates University has strict guidelines surrounding surveying and confidentiality. Be assured that all the data gathered by Ms. Al Mannaee will be confidential and will not be used for any purposes other than academic research by the researcher. No names or identifying information will be gathered as part of the questionnaire.

Your assistance to Ms. Al Mannaee by allowing her access to members of your organization for research purposes is appreciated.

Sincerely,

Mohamed Madi, Ph.D.

Acting Dean

Appendix III: Email & Questionnaire

College of Business
and Economics

Doctorate of Business Administration

Dear participant,

My name is Nadya Shafeeq Al Mannaee, I am a doctorate student and I am conducting a research study titled *"Determinants of competency based training effectiveness: perception of trainees"*. I would like to gather information from you regarding the effectiveness of competency based program that you received in your work. Please note that although I would greatly appreciate completing the attached questionnaire, participation in this study is voluntary. Please be assured that all data gathered will be treated as confidential and will not be used for any purposes other than academic research. No names or identifying information will be gathered as part of the questionnaire.

Your assistance for research purposes is highly appreciated.

Sincerely,

Nadya Shafeeq Al Mannaee

Questionnaire

Determinants of competency based training effectiveness: perception of trainees

What is your gender?

□ Male □Female

What is your nationality?

□ UAE National □Others

What is your age?

..................Years

What is your current job?

....

How long have you been in your current job?

.... Year(s) ....Month(s)

How many years of service do you have in your current company? .... Year(s) ....Month(s)
How long have you been in the program? .... Year(s) ....Month(s)
If you completed the program, which year did you finish the program?
If you are still in the program right now, which level you are at? □ Assessment 1 □ Assessment 2 □ Assessment 3 □ Assessment 4 □ None
Which verification you completed so far? □ Verification 1 □ Verification 2 □ Verification 3 □ Verification 4 □ All □ None

What is your job category? □ Managerial/Supervisory □ Technical/Engineering □ Administrative/Clerical □ Sales/Marketing □ Specialist/ Professional
What is your level of education? □ Less than high school □ High school graduate □ Bachelor degree □ Master degree □ Doctorate degree □ Other (please specify)...

1. Competency model goals, content and material:

This refers to the competency framework developed for the job that you will be holding after completing the program (the material are the DFW and PDP, the content is the competency questions)

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
The content and material covered in the program are relevant to my job	□ 1	□ 2	□ 3	□ 4	□ 5
It is easy to understand the content of the program	□ 1	□ 2	□ 3	□ 4	□ 5
The program objectives, content and material are in line with my job needs	□ 1	□ 2	□ 3	□ 4	□ 5
The program content meet the stated objectives	□ 1	□ 2	□ 3	□ 4	□ 5
The program content and material are well suited to the objectives of the program	□ 1	□ 2	□ 3	□ 4	□ 5
In general, I am satisfied with the program goals, content and material used	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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2. The supervision process:

The supervisor is the person (line manager/team leader/sub-team leader/supervisor) in charge of tracking the outputs of the trainee at work. He structures and puts an action plan for the trainee in order to close the gap and achieve the required standards when performing his/her job tasks

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
My supervisor explains to me the link between the competency framework and the job tasks	□ 1	□ 2	□ 3	□ 4	□ 5
My supervisor regularly discusses my training and development needs with me	□ 1	□ 2	□ 3	□ 4	□ 5
My supervisor reviews my progress on tasks and development goals with me at timely intervals	□ 1	□ 2	□ 3	□ 4	□ 5
My supervisor meets with me to discuss the ways of implementing what I learn on the job	□ 1	□ 2	□ 3	□ 4	□ 5
My supervisor regularly discusses the content and benefits of the program with me	□ 1	□ 2	□ 3	□ 4	□ 5
My supervisor shows interest in my progress and what I learn in the program	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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3. The coaching process:

The coach is the person in charge of helping the trainee to grow and develop on the job by providing him/her with the required direction.

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
My coach provides me with the required feedback regarding my performance	□ 1	□ 2	□ 3	□ 4	□ 5
My coach is knowledgeable and helpful in providing support and direction	□ 1	□ 2	□ 3	□ 4	□ 5
My coach gives supportive comments to improve my behavior	□ 1	□ 2	□ 3	□ 4	□ 5
The way my coach guides me through the material makes me feel more confident to apply it on the job	□ 1	□ 2	□ 3	□ 4	□ 5
My coach helps me to finish assignments that otherwise would have been difficult to complete	□ 1	□ 2	□ 3	□ 4	□ 5
My coach explains the material clearly to me	□ 1	□ 2	□ 3	□ 4	□ 5
In general, I am satisfied with the coaching process exercised/applied during my development program	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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4. The assessment process

The assessor is the person in charge of performing the function of assessment and evaluation of your learning. He assesses you on what you can do (not on your ability to memorize and pass tests)

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
I clearly understand my strengths and weaknesses as a result of the assessment process applied	□ 1	□ 2	□ 3	□ 4	□ 5
The assessment process is comprehensive and measures all the important dimensions of the program	□ 1	□ 2	□ 3	□ 4	□ 5
The assessment process helps me become more competent	□ 1	□ 2	□ 3	□ 4	□ 5
The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program	□ 1	□ 2	□ 3	□ 4	□ 5
I am satisfied with the feedback provided at the end of the assessment	□ 1	□ 2	□ 3	□ 4	□ 5
In general, I am satisfied with the assessment process exercised/applied during my development program	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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5. The verification process

The verifier is the person in charge of performing the function of verification and evaluation of your learning. He verifies you on what you can do (not your ability to memorize and pass assessments)

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
The new skills covered in the program are well tested by the verifier to ensure that I am competent	□ 1	□ 2	□ 3	□ 4	□ 5
The verification process is comprehensive and measures all the important dimensions of the program	□ 1	□ 2	□ 3	□ 4	□ 5
The verification process helps me become competent	□ 1	□ 2	□ 3	□ 4	□ 5
The questions asked during the verification are relevant and appropriate to the content and the material covered in the program	□ 1	□ 2	□ 3	□ 4	□ 5
I am satisfied with the feedback provided at the end of the verification	□ 1	□ 2	□ 3	□ 4	□ 5
In general, I am satisfied with the verification process exercised/applied during my development program	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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6. The advising process:

The advisor is the person from the Manpower Development Department (MD Department) who ensures that the assessor and verifier are following the standards and the coach and mentor are following up the trainee's progress

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
Before the start of the competency program, I have a good understanding of how it would fit my job	□ 1	□ 2	□ 3	□ 4	□ 5
The expected outcomes of the program are well clarified at the beginning of the program by the advisor	□ 1	□ 2	□ 3	□ 4	□ 5
My advisor is supportive in solving problems that arise from time to time during the program	□ 1	□ 2	□ 3	□ 4	□ 5
My advisor monitors my progress regularly	□ 1	□ 2	□ 3	□ 4	□ 5
In general, I am satisfied with the advising process exercised/applied during my development program	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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7. Competency-based perceived effectiveness:

This section is related to the perceived level of effectiveness of the competency program/model. The questions below are related to the degree to which you believe that the competency program was able to reach the intended objectives/goals or expected outcomes

	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
The program is useful for my career development	□ 1	□ 2	□ 3	□ 4	□ 5
What I learn in the program closely matches my job requirements	□ 1	□ 2	□ 3	□ 4	□ 5
My knowledge and skills increased as a result of the program	□ 1	□ 2	□ 3	□ 4	□ 5
The program allows me to develop specific skills that I can use on the job	□ 1	□ 2	□ 3	□ 4	□ 5
The program prepares me to be more effective on my job	□ 1	□ 2	□ 3	□ 4	□ 5
The program provides trainees with the experience required for the job	□ 1	□ 2	□ 3	□ 4	□ 5
I would recommend this program to other employees who have the opportunity	□ 1	□ 2	□ 3	□ 4	□ 5
The program helped me increase my performance	□ 1	□ 2	□ 3	□ 4	□ 5
The knowledge and skills gained are directly applicable to my job	□ 1	□ 2	□ 3	□ 4	□ 5

The program helps prepare for better career opportunities within the company in the future	□ 1	□ 2	□ 3	□ 4	□ 5
In general, the program is very effective	□ 1	□ 2	□ 3	□ 4	□ 5

Any Comments or suggestions

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Appendix IV: Data Screening

Normality test

Normality test

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Material_1	-.823	.126	-.329	.251
Material_2	-.699	.126	-.528	.251
Material_3	-.306	.126	-1.137	.251
Material_4	-.510	.126	-.465	.251
Material_5	-.228	.126	-1.088	.251
Material_6	-.355	.126	-1.040	.251
Advising_1	-.427	.126	-1.016	.251
Advising_2	-.954	.126	.160	.251
Advising_3	-1.101	.126	.291	.251
Advising_4	-.436	.126	-.877	.251
Advising_5	-.758	.126	-.565	.251
Coaching_1	-.336	.126	-1.269	.251
Coaching_2	-.723	.126	-.668	.251
Coaching_3	-.775	.126	-.598	.251
Coaching_4	-.321	.126	-1.023	.251
Coaching_5	-.628	.126	-.899	.251
Coaching_6	-.674	.126	-.647	.251
Coaching_7F	-.431	.126	-1.113	.251
Supervision_1	-.579	.126	-.907	.251
Supervision_2	-.215	.126	-1.324	.251
Supervision_3	-1.081	.126	.474	.251
Supervision_4	-1.079	.126	.533	.251
Supervision_5	-.480	.126	-.482	.251

Supervision_6	-1.389	.126	1.425	.251
Supervision_7	-.461	.126	-1.096	.251
Effectiveness_1	-.341	.126	-1.251	.251
Effectiveness_2	-.684	.126	-.275	.251
Effectiveness_3	-.085	.126	-1.440	.251
Effectiveness_4	-.683	.126	-.433	.251
Effectiveness_5	-.552	.126	-.645	.251
Effectiveness_6	-.959	.126	.198	.251
Effectiveness_7	-1.001	.126	1.279	.251
Effectiveness_8	-.821	.126	-.515	.251
Effectiveness_9	-.424	.126	-1.026	.251
Effectiveness_10	-.420	.126	-1.189	.251
Effectiveness_11F	-.296	.126	-.816	.251
Verification_1	-.449	.126	-.910	.251
Verification_2	-.604	.126	-.345	.251
Verification_3	-.426	.126	-.1.166	.251
Verification_4	-.743	.126	-.383	.251
Verification_5	-1.060	.126	.850	.251
Verification_6	-.819	.126	-.076	.251
Assessment_1	-.384	.126	-.961	.251
Assessment_2	-.798	.126	.792	.251
Assessment_3	-.233	.126	-1.319	.251
Assessment_4	-1.045	.126	.688	.251
Assessement_5	-.658	.126	-.512	.251
Assessment_6	-.851	.126	.318	.251

Appendix V: Exploratory Factor Analysis (EFA)

- Correlation Matrix

Correlation Matrix

		Material_1	Material_3	Material_6	Advising_2	Advising_3	Advising_5	Coaching_2	Coaching_3	Coaching_7F	Supervision_1	Supervision_2	Supervision_7	Effectiveness_4	Effectiveness_5	Effectiveness_11F	Assessment_2	Assessment_4	Assessment_6
Correlation	Material_1	1.000	.700	.603	.288	.311	.479	.306	.403	.360	.344	.279	.337	.558	.595	.499	.438	.464	.453
	Material_3	.700	1.000	.661	.379	.380	.492	.378	.424	.364	.413	.296	.415	.555	.588	.432	.438	.441	.430
	Material_6	.603	.661	1.000	.243	.353	.438	.324	.441	.382	.290	.259	.276	.574	.601	.520	.456	.419	.470
	Advising_2	.288	.379	.243	1.000	.535	.619	.295	.261	.265	.341	.300	.321	.304	.288	.219	.397	.382	.382
	Advising_3	.311	.380	.353	.535	1.000	.839	.340	.258	.345	.336	.363	.320	.341	.331	.273	.542	.532	.533
	Advising_5	.479	.492	.438	.619	.839	1.000	.366	.341	.379	.459	.422	.427	.442	.447	.345	.562	.583	.585
	Coaching_2	.306	.378	.324	.295	.340	.366	1.000	.754	.686	.599	.502	.573	.212	.217	.242	.352	.379	.376
	Coaching_3	.403	.424	.441	.261	.258	.341	.754	1.000	.735	.614	.581	.634	.338	.297	.301	.432	.416	.452
	Coaching_7F	.360	.364	.382	.265	.345	.379	.686	.735	1.000	.603	.600	.597	.346	.321	.334	.436	.447	.489
	Supervision_1	.344	.413	.290	.341	.336	.459	.599	.614	.603	1.000	.712	.751	.360	.300	.375	.482	.487	.494
	Supervision_2	.279	.296	.259	.300	.363	.422	.502	.581	.600	.712	1.000	.774	.288	.212	.315	.458	.467	.439
	Supervision_7	.337	.415	.276	.321	.320	.427	.573	.634	.597	.751	.774	1.000	.291	.264	.287	.464	.440	.425

Effectiveness_4	.558	.555	.574	.304	.341	.442	.212	.338	.346	.360	.288	.291	1.000	.823	.731	.481	.490	.509
Effectiveness_5	.595	.588	.601	.288	.331	.447	.217	.297	.321	.300	.212	.264	.823	1.000	.748	.525	.499	.504
Effectiveness_11F	.499	.432	.520	.219	.273	.345	.242	.301	.334	.375	.315	.287	.731	.748	1.000	.486	.514	.518
Assessment_2	.438	.438	.456	.397	.542	.562	.352	.432	.436	.482	.458	.464	.481	.525	.486	1.000	.802	.846
Assessment_4	.464	.441	.419	.382	.532	.583	.379	.416	.447	.487	.467	.440	.490	.499	.514	.802	1.000	.903
Assessment_6	.453	.430	.470	.382	.533	.585	.376	.452	.489	.494	.439	.425	.509	.504	.518	.846	.903	1.000

- **KMO and Bartlett's Test**

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.894
Bartlett's Test of Sphericity	Approx. Chi-Square	5643.857
	df	153
	Sig.	.000

- **Communalities**

Communalities

	Initial	Extraction
Material_1	1.000	.787
Material_3	1.000	.846
Material_6	1.000	.740
Advising_2	1.000	.717
Advising_3	1.000	.823
Advising_5	1.000	.867
Coaching_2	1.000	.838
Coaching_3	1.000	.848
Coaching_7F	1.000	.797
Supervision_1	1.000	.803
Supervision_2	1.000	.825
Supervision_7	1.000	.865
Effectiveness_4	1.000	.859
Effectiveness_5	1.000	.869
Effectiveness_11F	1.000	.843
Assessment_2	1.000	.853
Assessment_4	1.000	.897
Assessment_6	1.000	.931

Extraction Method: Principal Component Analysis.

Total Variance Explained

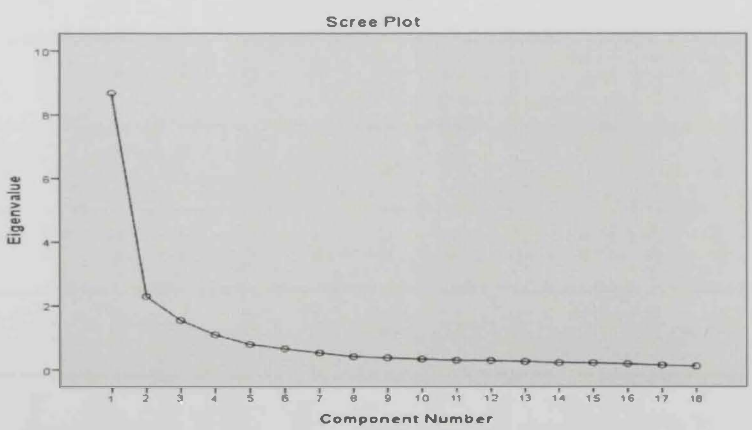
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.673	48.183	48.183	8.673	48.183	48.183	6.307
2	2.290	12.721	60.903	2.290	12.721	60.903	5.389
3	1.538	8.547	69.450	1.538	8.547	69.450	5.233
4	1.087	6.039	75.489	1.087	6.039	75.489	5.476
5	.782	4.342	79.832	.782	4.342	79.832	4.879
6	.638	3.545	83.376	.638	3.545	83.376	5.618
7	.512	2.843	86.219				
8	.392	2.175	88.394				
9	.349	1.940	90.334				
10	.306	1.701	92.036				
11	.265	1.472	93.508				
12	.250	1.390	94.898				
13	.222	1.232	96.130				
14	.186	1.032	97.162				
15	.180	.999	98.161				
16	.148	.821	98.982				
17	.106	.588	99.570				
18	.077	.430	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

- Total Variance Explained

- Scree Plot



Reproduced Correlations

		Material_1	Material_3	Material_6	Advising_2	Advising_3	Advising_5	Coaching_2	Coaching_3	Coaching_7F	Supervision_1	Supervision_2	Supervision_7	Effectiveness_4	Effectiveness_5	Effectiveness_11F	Assessment_2	Assessment_4	Assessment_6
Reproduced Correlation	Material_1	.787[a]	.803	.720	.277	.315	.461	.291	.403	.321	.358	.279	.371	.570	.609	.470	.460	.455	.457
	Material_3	.803	.846[a]	.726	.370	.382	.535	.353	.444	.356	.403	.323	.426	.549	.583	.425	.431	.421	.419
	Material_6	.720	.726	.740[a]	.253	.330	.433	.378	.461	.402	.281	.184	.260	.595	.641	.510	.455	.454	.477
	Advising_2	.277	.370	.253	.717[a]	.714	.744	.300	.221	.271	.356	.337	.337	.324	.303	.220	.354	.345	.337
	Advising_3	.315	.382	.330	.714	.823[a]	.820	.354	.278	.339	.342	.319	.304	.336	.337	.252	.563	.565	.572
	Advising_5	.461	.535	.433	.744	.820	.867[a]	.377	.337	.374	.448	.417	.424	.442	.441	.340	.598	.597	.595
	Coaching_2	.291	.353	.378	.300	.354	.377	.838[a]	.816	.792	.578	.529	.569	.225	.203	.212	.346	.349	.381
	Coaching_3	.403	.444	.461	.221	.278	.337	.816	.848[a]	.804	.637	.584	.635	.314	.298	.314	.417	.421	.449
	Coaching_7F	.321	.356	.402	.271	.339	.374	.792	.804	.797[a]	.629	.584	.605	.347	.321	.362	.450	.457	.487
	Supervision_1	.358	.403	.281	.356	.342	.448	.578	.637	.629	.803[a]	.805	.823	.366	.310	.377	.490	.491	.479
	Supervision_2	.279	.323	.184	.337	.319	.417	.529	.584	.584	.805	.825[a]	.832	.288	.225	.314	.475	.476	.457
	Supervision_7	.371	.426	.260	.337	.304	.424	.569	.635	.605	.823	.832	.865[a]	.291	.235	.294	.450	.448	.428
	Effectiveness_4	.570	.549	.595	.324	.336	.442	.225	.314	.347	.366	.288	.291	.859[a]	.857	.828	.485	.485	.497
	Effectiveness_5	.609	.583	.641	.303	.337	.441	.203	.298	.321	.310	.225	.235	.857	.869[a]	.818	.500	.502	.517
	Effectiveness_11F	.470	.425	.510	.220	.252	.340	.212	.314	.362	.377	.314	.294	.828	.818	.843[a]	.505	.512	.526

	Assessment_2	.460	.431	.455	.354	.563	.598	.346	.417	.450	.490	.475	.450	.485	.500	.505	.853[a]	.874	.887
	Assessment_4	.455	.421	.454	.345	.565	.597	.349	.421	.457	.491	.476	.448	.485	.502	.512	.874	.897[a]	.911
	Assessment_6	.457	.419	.477	.337	.572	.595	.381	.449	.487	.479	.457	.428	.497	.517	.526	.887	.911	.931[a]
Residual[b]	Material_1		-.103	-.117	.011	-.004	.018	.014	########	.039	-.014	.000	-.034	-.012	-.015	.029	-.022	.009	-.004
	Material_3	-.103		-.065	.010	-.002	-.043	.025	-.020	.008	.010	-.027	-.011	.006	.005	.007	.007	.020	.011
	Material_6	-.117	-.065		-.010	.023	.005	-.054	-.020	-.020	.009	.075	.016	-.021	-.040	.010	.002	-.035	-.006
	Advising_2	.011	.010	-.010		-.179	-.125	-.006	.040	-.005	-.015	-.037	-.017	-.020	-.015	-.001	.044	.037	.045
	Advising_3	-.004	-.002	.023	-.179		.018	-.014	-.020	.007	-.006	.044	.016	.005	-.006	.021	-.020	-.033	-.039
	Advising_5	.018	-.043	.005	-.125	.018		-.012	.004	.005	.012	.004	.003	-.001	.006	.004	-.036	-.014	-.010
	Coaching_2	.014	.025	-.054	-.006	-.014	-.012		-.062	-.105	.021	-.027	.004	-.013	.014	.030	.006	.030	-.005
	Coaching_3	########	-.020	-.020	.040	-.020	.004	-.062		-.069	-.023	-.004	-.001	.023	-.001	-.013	.015	-.005	.003
	Coaching_7F	.039	.008	-.020	-.005	.007	.005	-.105	-.069		-.027	.017	-.008	-.001	.000	-.028	-.014	-.010	.001
	Supervision_1	-.014	.010	.009	-.015	-.006	.012	.021	-.023	-.027		-.093	-.071	-.005	-.010	-.002	-.008	-.004	.015
	Supervision_2	.000	-.027	.075	-.037	.044	.004	-.027	-.004	.017	-.093		-.058	-.001	-.013	.001	-.016	-.009	-.018
	Supervision_7	-.034	-.011	.016	-.017	.016	.003	.004	-.001	-.008	-.071	-.058		2.014E-06	.029	-.007	.013	-.008	-.003
	Effectiveness_4	-.012	.006	-.021	-.020	.005	-.001	-.013	.023	-.001	-.005	-.001	2.014E-06		-.034	-.097	-.004	.005	.013
	Effectiveness_5	-.015	.005	-.040	-.015	-.006	.006	.014	-.001	.000	-.010	-.013	.029	-.034		-.071	.025	-.003	-.013

Effectiveness_11F	.029	.007	.010	-.001	.021	.004	.030	-.013	-.028	-.002	.001	-.007	-.097	-.071		-.019	.002	-.008
Assessment_2	-.022	.007	.002	.044	-.020	-.036	.006	.015	-.014	-.008	-.016	.013	-.004	.025	-.019		-.072	-.041
Assessment_4	.009	.020	-.035	.037	-.033	-.014	.030	-.005	-.010	-.004	-.009	-.008	.005	-.003	.002	-.072		-.008
Assessment_6	-.004	.011	-.006	.045	-.039	-.010	-.005	.003	.001	.015	-.018	-.003	.013	-.013	-.008	-.041	-.008	

Extraction Method: Principal Component Analysis.

a. Reproduced communalities

b. Residuals are computed between observed and reproduced correlations. There are 16 (10.0%) nonredundant residuals with absolute values greater than 0.05.

- Pattern Matrix with coefficients

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1	.059	.015	.072	-.094	-.068	.892
Material_3	-.088	-.047	.118	-.055	.079	.934
Material_6	.077	.150	-.247	.237	-.042	.686
Advising_2	-.213	.077	.096	-.017	.908	-.040
Advising_3	.217	-.058	-.137	.083	.845	-.068
Advising_5	.123	-.021	.047	-.037	.788	.130
Coaching_2	-.088	-.082	-.003	.947	.114	-.020
Coaching_3	.012	-.040	.119	.824	-.112	.128
Coaching_7F	.051	.103	.085	.822	-.004	-.112
Supervision_1	.020	.083	.769	.115	.024	-.010
Supervision_2	.073	.023	.869	.024	.019	-.084
Supervision_7	-.012	-.069	.884	.044	-.013	.126
Effectiveness_4	-.069	.892	.027	-.026	.078	.065
Effectiveness_5	.003	.831	-.081	-.023	.047	.164
Effectiveness_11F	.080	.953	.070	.000	-.081	-.128
Assessment_2	.886	.007	.068	-.051	.016	.028
Assessment_4	.938	.004	.052	-.042	-.003	.007
Assessment_6	.961	.020	-.032	.046	-.012	-.016

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Structure Matrix

Structure Matrix

	Component					
	1	2	3	4	5	6
Material_1	.476	.579	.332	.377	.378	.882
Material_3	.439	.543	.386	.425	.471	.911
Material_6	.486	.620	.213	.473	.363	.825
Advising_2	.359	.291	.358	.285	.831	.346

Advising_3	.600	.318	.317	.360	.890	.388
Advising_5	.627	.423	.438	.397	.915	.545
Coaching_2	.378	.230	.574	.905	.372	.375
Coaching_3	.450	.334	.641	.911	.290	.483
Coaching_7F	.489	.375	.626	.883	.347	.390
Supervision_1	.500	.376	.885	.652	.413	.390
Supervision_2	.482	.295	.905	.593	.387	.294
Supervision_7	.452	.289	.924	.634	.384	.402
Effectiveness_4	.508	.922	.308	.331	.399	.630
Effectiveness_5	.528	.921	.239	.312	.389	.675
Effectiveness_11F	.536	.908	.326	.330	.284	.506
Assessment_2	.922	.530	.478	.445	.539	.495
Assessment_4	.946	.534	.477	.451	.535	.488
Assessment_6	.964	.550	.453	.488	.533	.494

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

- Component Correlation Matrix

Component Correlation Matrix

Component	Assessment	Effectiveness	Supervision	Coaching	Advising	Material
1	1.000	.560	.479	.486	.563	.513
2	.560	1.000	.310	.352	.368	.635
3	.479	.310	1.000	.641	.401	.352
4	.486	.352	.641	1.000	.368	.466
5	.563	.368	.401	.368	1.000	.463
6	.513	.635	.352	.466	.463	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

- Reliability for all items

1. Competency model design items

Reliability Statistics

Cronbach's Alpha	N of Items
.901	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Material_1	16.9147	26.110	.728	.884
Material_2	17.0000	26.406	.664	.894
Material_3	17.1520	24.488	.774	.877
Material_4	17.0453	26.081	.746	.882
Material_5	17.1760	25.418	.706	.888
Material_6	17.1653	24.657	.773	.877

2. Advising Process

Reliability Statistics

Cronbach's Alpha	N of Items
.864	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Advising_1	14.7013	14.665	.776	.810
Advising_2	14.3493	16.356	.704	.831
Advising_3	14.1173	16.296	.692	.834
Advising_4	14.6533	18.366	.442	.892
Advising_5	14.3813	14.793	.826	.798

3. Coaching Process

Reliability Statistics

Cronbach's Alpha	N of Items
.914	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Coaching_1	21.0107	39.802	.805	.894
Coaching_2	20.5893	41.681	.749	.900
Coaching_3	20.6693	40.286	.827	.891
Coaching_4	20.9120	40.770	.799	.895
Coaching_5	20.7600	41.140	.750	.900
Coaching_6	20.8773	47.306	.403	.933
Coaching_7F	20.8133	39.334	.837	.890

4. Supervision Process

Reliability Statistics

Cronbach's Alpha	N of Items
.842	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Supervision_1	21.4453	24.280	.707	.802
Supervision_2	21.5173	24.079	.704	.802
Supervision_3	21.1120	27.966	.506	.833
Supervision_4	20.9893	29.374	.391	.848
Supervision_5	21.2933	27.058	.556	.826
Supervision_6	21.1067	27.550	.608	.820
Supervision_7	21.3360	23.956	.701	.803

5. Perceived effectiveness of competency model

Reliability Statistics

Cronbach's Alpha	N of Items
.878	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Effectiveness_1	34.9600	65.359	.515	.874
Effectiveness_2	34.7387	66.627	.611	.866
Effectiveness_3	35.0560	62.481	.650	.863
Effectiveness_4	34.6560	64.488	.716	.859
Effectiveness_5	34.6533	65.120	.683	.862
Effectiveness_6	34.4987	66.983	.592	.867
Effectiveness_7	34.4907	68.069	.643	.866
Effectiveness_8	34.5680	67.086	.479	.875
Effectiveness_9	34.7280	70.937	.353	.882
Effectiveness_10	34.8160	64.220	.600	.867
Effectiveness_11F	34.8080	64.760	.691	.861

6. Verification Process

Reliability Statistics

Cronbach's Alpha	N of Items
.850	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Verification_1	18.0853	18.458	.503	.859
Verification_2	17.7360	18.644	.660	.820
Verification_3	18.0400	20.413	.492	.850
Verification_4	17.7387	18.552	.692	.814
Verification_5	17.6720	18.643	.810	.797
Verification_6	17.7280	18.573	.730	.808

7. Assessment Process

Reliability Statistics

Cronbach's Alpha	N of Items
.871	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Assessment_1	17.5653	19.471	.582	.868
Assessment_2	17.1867	19.869	.822	.830
Assessment_3	17.7040	20.621	.422	.901
Assessment_4	17.2507	19.472	.780	.833
Assessement_5	17.3227	19.278	.746	.837
Assessment_6	17.2507	18.878	.821	.825

- **Items removed during the EFA:**
  - Pattern matrix without removing any item

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.320					.581	
Material_2	.581						
Material_3						.745	
Material_4						.730	.321
Material_5						.469	.355
Material_6	.326					.583	
Advising_1		-.332			.769		
Advising_2					.785		
Advising_3					.788		
Advising_4	.839						
Advising_5					.832		
Coaching_1		.432		.644			
Coaching_2				.956			
Coaching_3				.753			
Coaching_4				.757			
Coaching_5				.635			.355
Coaching_6	.882						
Coaching_7F				.757			
Supervision_1		.613					
Supervision_2		.771					

Supervision_3	.668						
Supervision_4	.933						
Supervision_5			.818				
Supervision_6							.724
Supervision_7		.696					
Effectiveness_1		.940					
Effectiveness_2	.572					.440	
Effectiveness_3		.784					
Effectiveness_4	.909						
Effectiveness_5	.900						
Effectiveness_6							.742
Effectiveness_7			.692				
Effectiveness_8					.820		
Effectiveness_9						.537	
Effectiveness_10				.809			
Effectiveness_11F	.918						
Verification_1	.657						
Verification_2			.953				
Verification_3		.771					
Verification_4			.521			.480	
Verification_5			.532				.309
Verification_6			.469				.571
Assessment_1	.769						
Assessment_2			.809				
Assessment_3		.933					
Assessment_4			.865				
Assessement_5			.341				.359
Assessment_6			.886				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

- Patter matrix after removing advising_1 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.368					.587	
Material_2	.602					.306	
Material_3						.725	
Material_4						.618	
Material_5	.358		-.344		.364	.338	
Material_6	.449					.450	
Advising_2					.545		
Advising_3					.793		
Advising_4	.834						
Advising_5					.778		
Coaching_1		.440		.624			
Coaching_2				.935			
Coaching_3				.765			
Coaching_4				.790			
Coaching_5				.770			
Coaching_6	.860						
Coaching_7F				.784			
Supervision_1		.718					
Supervision_2		.796					
Supervision_3	.660						
Supervision_4	.934						
Supervision_5			.767				
Supervision_6							.832
Supervision_7		.785					
Effectiveness_1		.957					
Effectiveness_2	.606					.444	
Effectiveness_3		.756					
Effectiveness_4	.889						
Effectiveness_5	.884						
Effectiveness_6							.761
Effectiveness_7			.633				
Effectiveness_8					.845		
Effectiveness_9		-.312				.502	

Effectiveness_10				.794			
Effectiveness_11F	.891						
Verification_1	.696						
Verification_2			.898				
Verification_3		.787					
Verification_4			.478			.532	
Verification_5			.474				.458
Verification_6			.391				.679
Assessment_1	.770						
Assessment_2			.752				
Assessment_3		.899					
Assessment_4			.846				
Assessement_5			.305				.431
Assessment_6			.841				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

- Pattern Matrix after removing Effectiveness_9 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.407						.581
Material_2	.630						
Material_3	.331						.715
Material_4						.334	.544
Material_5	.401		-.352		.346	.323	
Material_6	.486						.394
Advising_2					.555		
Advising_3					.800		
Advising_4	.841						
Advising_5					.789		
Coaching_1		.414		.642			
Coaching_2				.964			
Coaching_3				.788			
Coaching_4				.791			
Coaching_5				.761			

Coaching_6	.853						
Coaching_7F				.801			
Supervision_1		.695					
Supervision_2		.803					
Supervision_3	.662						
Supervision_4	.936						
Supervision_5			.758				
Supervision_6		.309				.824	
Supervision_7		.769					
Effectiveness_1		.964					
Effectiveness_2	.630						.466
Effectiveness_3		.771					
Effectiveness_4	.889						
Effectiveness_5	.890						
Effectiveness_6						.748	
Effectiveness_7			.642				
Effectiveness_8					.851		
Effectiveness_10				.807			
Effectiveness_11F	.887						
Verification_1	.720						
Verification_2			.894				
Verification_3		.779					
Verification_4			.492				.551
Verification_5			.498			.426	
Verification_6			.429			.644	
Assessment_1	.770						
Assessment_2			.752				
Assessment_3		.915					
Assessment_4			.843				
Assessement_5			.325			.422	
Assessment_6			.843				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

- Pattern Matrix after removing Material 5 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.392						.594
Material_2	.614						
Material_3	.322						.727
Material_4						.313	.568
Material_6	.484						.419
Advising_2					.601	.308	
Advising_3					.815		
Advising_4	.843						
Advising_5					.804		
Coaching_1		.410		.644			
Coaching_2				.972			
Coaching_3				.790			
Coaching_4				.797			
Coaching_5				.763			
Coaching_6	.861						
Coaching_7F				.805			
Supervision_1		.681					
Supervision_2		.800					
Supervision_3	.669						
Supervision_4	.932						
Supervision_5			.857				
Supervision_6						.858	
Supervision_7		.763					
Effectiveness_1		.965					
Effectiveness_2	.619						.476
Effectiveness_3		.778					
Effectiveness_4	.888						
Effectiveness_5	.888						
Effectiveness_6						.747	
Effectiveness_7			.644				
Effectiveness_8					.861		

Effectiveness_10				.812			
Effectiveness_11F	.874						
Verification_1	.722						
Verification_2			.961				
Verification_3		.773					
Verification_4			.421				.552
Verification_5			.410			.472	
Verification_6			.355			.667	
Assessment_1	.780						
Assessment_2			.800				
Assessment_3		.926					
Assessment_4			.879				
Assessement_5						.435	
Assessment_6			.896				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

- Pattern Matrix after removing Material_4 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.488						.521
Material_2	.661						
Material_3	.445						.621
Material_6	.600						
Advising_2					.612	.369	
Advising_3					.818		
Advising_4	.857						
Advising_5					.813		
Coaching_1		.400		.657			
Coaching_2				.992			
Coaching_3				.817			
Coaching_4				.789			
Coaching_5				.768			-.336

Coaching_6	.863						
Coaching_7F				.820			
Supervision_1		.667					
Supervision_2		.800					
Supervision_3	.703						
Supervision_4	.924						
Supervision_5			.877				
Supervision_6						.880	
Supervision_7		.748					
Effectiveness_1		.970					
Effectiveness_2	.697						.427
Effectiveness_3		.784					
Effectiveness_4	.878						
Effectiveness_5	.894						
Effectiveness_6						.724	
Effectiveness_7			.652				
Effectiveness_8					.862		
Effectiveness_10				.815			
Effectiveness_11F	.845						
Verification_1	.769						
Verification_2			.963				
Verification_3		.765					
Verification_4			.329			.314	.547
Verification_5			.336			.535	
Verification_6						.708	
Assessment_1	.798						
Assessment_2			.803				
Assessment_3		.935					
Assessment_4			.869				
Assessessement_5						.467	
Assessment_6			.886				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing Coaching_5 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.438						.564
Material_2	.627						.313
Material_3	.379						.708
Material_6	.552						.337
Advising_2					.616	.384	
Advising_3					.815		
Advising_4	.853						
Advising_5					.806		
Coaching_1		.430		.634			
Coaching_2				1.003			
Coaching_3				.754			
Coaching_4				.806			
Coaching_6	.862						
Coaching_7F				.771			
Supervision_1		.629					
Supervision_2		.795					
Supervision_3	.681						
Supervision_4	.926						
Supervision_5			.898				
Supervision_6						.897	
Supervision_7		.720					
Effectiveness_1		.972					
Effectiveness_2	.648						.491
Effectiveness_3		.784					
Effectiveness_4	.873						
Effectiveness_5	.887						
Effectiveness_6						.735	
Effectiveness_7			.654				
Effectiveness_8					.860		
Effectiveness_10				.846			
Effectiveness_11F	.861						
Verification_1	.757						
Verification_2			.980				

Verification_3		.759					
Verification_4			.335			.349	.466
Verification_5			.339			.564	
Verification_6						.733	
Assessment_1	.799						
Assessment_2			.795				
Assessment_3		.964					
Assessment_4			.866				
Assessement_5						.497	
Assessment_6			.888				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matix after removing Verification_4 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.393						.559
Material_2	.632						
Material_3	.303						.724
Material_6	.466						.413
Advising_2					.658	.350	
Advising_3					.811		
Advising_4	.882						
Advising_5					.824		
Coaching_1		.432		.640			
Coaching_2				1.015			
Coaching_3				.759			
Coaching_4				.781			
Coaching_6	.880						
Coaching_7F				.762			
Supervision_1		.619					
Supervision_2		.794					
Supervision_3	.640						
Supervision_4	.919						
Supervision_5			.901				
Supervision_6						.912	

	1	2	3	4	5	6	7
Supervision_7		.714					
Effectiveness_1		.980					
Effectiveness_2	.594						.508
Effectiveness_3		.798					
Effectiveness_4	.880						
Effectiveness_5	.887						
Effectiveness_6						.730	
Effectiveness_7			.686				
Effectiveness_8					.884		
Effectiveness_10				.853			
Effectiveness_11F	.922						
Verification_1	.796						
Verification_2			.993				
Verification_3		.763					
Verification_5			.380			.542	
Verification_6			.326			.702	
Assessment_1	.823						
Assessment_2			.822				
Assessment_3		.971					
Assessment_4			.878				
Assessement_5						.458	
Assessment_6			.919				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing Effectiveness_2 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.320						.657
Material_2	.615						
Material_3							.777
Material_6	.411						.474
Advising_2					.686	.350	
Advising_3					.818		
Advising_4	.883						

Advising_5					.812		
Coaching_1		.426		.647			
Coaching_2				1.013			
Coaching_3				.756			
Coaching_4				.788			
Coaching_6	.886						
Coaching_7F				.758			
Supervision_1		.610					
Supervision_2		.789					
Supervision_3	.654						
Supervision_4	.911						
Supervision_5			.899				
Supervision_6						.915	
Supervision_7		.715					
Effectiveness_1		.970					
Effectiveness_3		.805					
Effectiveness_4	.882						
Effectiveness_5	.876						
Effectiveness_6						.727	
Effectiveness_7			.684				
Effectiveness_8					.884		
Effectiveness_10				.852			
Effectiveness_11F	.938						
Verification_1	.785						
Verification_2			.989				
Verification_3		.761					
Verification_5			.367			.547	
Verification_6			.334			.702	
Assessment_1	.819						
Assessment_2			.825				
Assessment_3		.980					
Assessment_4			.878				
Assessement_5						.457	
Assessment_6			.923				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing verification_5 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1							.659
Material_2	.623						
Material_3							.768
Material_6	.388						.489
Advising_2					.740		
Advising_3					.820		
Advising_4	.894						
Advising_5					.814		
Coaching_1		.433		.637			
Coaching_2				1.006			
Coaching_3				.749			
Coaching_4				.770			
Coaching_6	.890						
Coaching_7F				.742			
Supervision_1		.615					
Supervision_2		.795					
Supervision_3	.682						
Supervision_4	.901						
Supervision_5			.888				
Supervision_6						.877	
Supervision_7		.719					
Effectiveness_1		.975					
Effectiveness_3		.810					
Effectiveness_4	.879						
Effectiveness_5	.869						
Effectiveness_6						.744	
Effectiveness_7			.691				
Effectiveness_8					.881		
Effectiveness_10				.841			
Effectiveness_11F	.946						
Verification_1	.800						
Verification_2			.977				
Verification_3		.765					
Verification_6			.354			.677	

	1	2	3	4	5	6	7
Assessment_1	.808						
Assessment_2			.826				
Assessment_3		.984					
Assessment_4			.874				
Assessement_5						.470	
Assessment_6			.923				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- **Pattern matrix after removing Verification_6 for cross loading**

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.310						.660
Material_2	.628						
Material_3							.770
Material_6	.394						.477
Advising_2					.763		
Advising_3					.806		
Advising_4	.901						
Advising_5					.827		
Coaching_1		.437		.631			
Coaching_2				1.006			
Coaching_3				.755			
Coaching_4				.757			
Coaching_6	.896						
Coaching_7F				.743			
Supervision_1		.627					
Supervision_2		.800					
Supervision_3	.680						
Supervision_4	.901						
Supervision_5			.873				
Supervision_6						.847	
Supervision_7		.718					
Effectiveness_1		.986					
Effectiveness_3		.817					

	1	2	3	4	5	6	7
Effectiveness_4	.875						
Effectiveness_5	.869						
Effectiveness_6						.651	
Effectiveness_7			.736				
Effectiveness_8					.887		
Effectiveness_10				.839			
Effectiveness_11F	.961						
Verification_1	.800						
Verification_2			.977				
Verification_3		.760					
Assessment_1	.808						
Assessment_2			.857				
Assessment_3		.978					
Assessment_4			.877				
Assessement_5						.358	
Assessment_6			.942				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing Assessment_5 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.303					.676	
Material_2	.620						
Material_3						.778	
Material_6	.392					.463	
Advising_2					.772		
Advising_3					.803		
Advising_4	.902						
Advising_5					.825		
Coaching_1		.442		.614			
Coaching_2				.992			
Coaching_3				.755			

Coaching_4				.739			
Coaching_6	.897						
Coaching_7F				.735			
Supervision_1		.640					
Supervision_2		.813					
Supervision_3	.679						
Supervision_4	.902						
Supervision_5			.854				
Supervision_6							.809
Supervision_7		.736					
Effectiveness_1		.985					
Effectiveness_3		.830					
Effectiveness_4	.865						
Effectiveness_5	.864						
Effectiveness_6							.587
Effectiveness_7			.739				.301
Effectiveness_8					.877		
Effectiveness_10				.817			
Effectiveness_11F	.959						
Verification_1	.799						
Verification_2			.961				
Verification_3		.764					
Assessment_1	.810						
Assessment_2			.845				
Assessment_3		.982					
Assessment_4			.861				
Assessment_6			.930				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- **Pattern Matrix after removing Effectiveness_7 for cross loading**

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1	.304					.682	
Material_2	.608						
Material_3						.784	
Material_6	.388					.460	
Advising_2					.759		
Advising_3					.807		
Advising_4	.904						
Advising_5					.825		
Coaching_1		.443		.615			
Coaching_2				.993			
Coaching_3				.756			
Coaching_4				.742			
Coaching_6	.896						
Coaching_7F				.737			
Supervision_1		.630					
Supervision_2		.813					
Supervision_3	.678						
Supervision_4	.903						
Supervision_5			.859				
Supervision_6							.816
Supervision_7		.737					
Effectiveness_1		.986					
Effectiveness_3		.837					
Effectiveness_4	.863						
Effectiveness_5	.866						
Effectiveness_6							.636
Effectiveness_8					.890		
Effectiveness_10				.819			
Effectiveness_11F	.951						
Verification_1	.812						
Verification_2			.954				
Verification_3		.767					
Assessment_1	.815						

	1	2	3	4	5	6	7
Assessment_2			.807				
Assessment_3		.982					
Assessment_4			.853				
Assessment_6			.918				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- **Pattern Matrix after remving Coaching_1 for cross loading**

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.687	
Material_2	.607						
Material_3						.788	
Material_6	.384					.462	
Advising_2					.761		
Advising_3					.806		
Advising_4	.903						
Advising_5					.823		
Coaching_2				1.003			
Coaching_3				.737			
Coaching_4				.738			
Coaching_6	.897						
Coaching_7F				.708			
Supervision_1		.638					
Supervision_2		.815					
Supervision_3	.677						
Supervision_4	.905						
Supervision_5			.862				
Supervision_6							.821
Supervision_7		.742					
Effectiveness_1		.987					
Effectiveness_3		.837					
Effectiveness_4	.865						
Effectiveness_5	.866						
Effectiveness_6							.644

Effectiveness_8					.886		
Effectiveness_10				.836			
Effectiveness_11F	.951						
Verification_1	.812						
Verification_2			.956				
Verification_3		.771					
Assessment_1	.813						
Assessment_2			.806				
Assessment_3		.974					
Assessment_4			.854				
Assessment_6			.919				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing effectiveness_6 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.702	
Material_2	.595						
Material_3						.770	
Material_6	.419					.515	
Advising_2					.651		.491
Advising_3					.817		
Advising_4	.905						
Advising_5					.825		
Coaching_2				1.005			
Coaching_3				.734			
Coaching_4				.753			
Coaching_6	.907						
Coaching_7F				.719			
Supervision_1		.618					
Supervision_2		.822					
Supervision_3	.708						
Supervision_4	.920						
Supervision_5			.835				

Supervision_6							.812
Supervision_7		.736					
Effectiveness_1		.968					
Effectiveness_3		.837					
Effectiveness_4	.868						
Effectiveness_5	.863						
Effectiveness_8					.913		
Effectiveness_10				.849			
Effectiveness_11F	.929						
Verification_1	.803						
Verification_2			.944				
Verification_3		.779					
Assessment_1	.813						
Assessment_2			.808				
Assessment_3		.994					
Assessment_4			.853				
Assessment_6			.915				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing supervision_6 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.683	
Material_2	.600					.309	
Material_3						.770	
Material_6	.369					.458	-.418
Advising_2					.704		.668
Advising_3					.879		
Advising_4	.918						
Advising_5					.842		
Coaching_2				1.013			
Coaching_3				.790			
Coaching_4				.738		-.321	
Coaching_6	.916						
Coaching_7F				.758			

Supervision_1		.678					
Supervision_2		.841					
Supervision_3	.702						
Supervision_4	.924						
Supervision_5			.850				
Supervision_7		.791					
Effectiveness_1		.991					
Effectiveness_3		.816					
Effectiveness_4	.879						
Effectiveness_5	.872						
Effectiveness_8					.916		
Effectiveness_10				.785			
Effectiveness_11F	.952						
Verification_1	.800						
Verification_2			.944				
Verification_3		.793					
Assessment_1	.817						
Assessment_2			.795				
Assessment_3		.967					
Assessment_4			.846				
Assessment_6			.905				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing coaching_4 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.778	
Material_2	.541					.372	
Material_3						.826	
Material_6	.338					.474	-.423
Advising_2				.710			.663
Advising_3				.878			
Advising_4	.914						
Advising_5				.842			
Coaching_2					.986		

Coaching_3					.790		
Coaching_6	.940						
Coaching_7F					.772		
Supervision_1		.660					
Supervision_2		.843					
Supervision_3	.729						
Supervision_4	.919						
Supervision_5			.851				
Supervision_7		.767					
Effectiveness_1		1.002					
Effectiveness_3		.843					
Effectiveness_4	.866						
Effectiveness_5	.861						
Effectiveness_8				.910			
Effectiveness_10					.721		
Effectiveness_11F	.981						
Verification_1	.795						
Verification_2			.942				
Verification_3		.790					
Assessment_1	.842						
Assessment_2			.796				
Assessment_3		.948					
Assessment_4			.846				
Assessment_6			.905				

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

- Pattern Matrix after removing Material_2 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.779	
Material_3						.871	
Material_6	.336					.506	-.328
Advising_2				.513			.725
Advising_3				.888			

Advising_4	.896						
Advising_5				.800			
Coaching_2					.992		
Coaching_3					.798		
Coaching_6	.924						
Coaching_7F					.793		
Supervision_1		.661					
Supervision_2		.838					
Supervision_3	.722						
Supervision_4	.916						
Supervision_5			.846				
Supervision_7		.764					
Effectiveness_1		1.000					
Effectiveness_3		.847					
Effectiveness_4	.858						
Effectiveness_5	.851						
Effectiveness_8				.893			
Effectiveness_10					.701		
Effectiveness_11F	.970						
Verification_1	.782						
Verification_2			.945				
Verification_3		.791					
Assessment_1	.831						
Assessment_2			.809				
Assessment_3		.959					
Assessment_4			.858				
Assessment_6			.911				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing verification_2 for cross loading

Pattern Matrix[a]

	Component						
	1	2	3	4	5	6	7
Material_1						.785	
Material_3						.871	
Material_6	.328					.507	-.329
Advising_2				.519			.724
Advising_3				.897			
Advising_4	.902						
Advising_5				.803			
Coaching_2					.995		
Coaching_3					.795		
Coaching_6	.927						
Coaching_7F					.792		
Supervision_1		.662					
Supervision_2		.842					
Supervision_3	.719						
Supervision_4	.908						
Supervision_5			.773				
Supervision_7		.767					
Effectiveness_1		1.005					
Effectiveness_3		.850					
Effectiveness_4	.859						
Effectiveness_5	.845						
Effectiveness_8				.894			
Effectiveness_10					.691		
Effectiveness_11F	.967						
Verification_1	.791						
Verification_3		.790					
Assessment_1	.831						
Assessment_2			.835				
Assessment_3		.963					
Assessment_4			.900				
Assessment_6			.938				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing Verification_1 and Verification 3 for cross loading and also because it is advised to have a construct with at least three items (Hair et al., 2014). The below matrix is after extracting 6 items instead of 7 items.

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.720
Material_3						.816
Material_6						.693
Advising_2			.880			
Advising_3			.824			
Advising_4	.897					
Advising_5			.825			
Coaching_2				.987		
Coaching_3				.764		
Coaching_6	.910					
Coaching_7F				.708		
Supervision_1		.583		.325		
Supervision_2		.829				
Supervision_3	.696					
Supervision_4	.895					
Supervision_5					.790	
Supervision_7		.701				
Effectiveness_1		.979				
Effectiveness_3		.848				
Effectiveness_4	.863					
Effectiveness_5	.860					
Effectiveness_8			.860			
Effectiveness_10				.755		
Effectiveness_11F	.954					
Assessment_1	.791					
Assessment_2					.848	
Assessment_3		.985				
Assessment_4					.909	
Assessment_6					.965	

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing advising_4 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.744
Material_3						.835
Material_6						.698
Advising_2			.869			
Advising_3			.835			
Advising_5			.830			
Coaching_2				.991		
Coaching_3				.765		
Coaching_6	.901					
Coaching_7F				.716		
Supervision_1		.582		.327		
Supervision_2		.828				
Supervision_3	.693					
Supervision_4	.905					
Supervision_5					.800	
Supervision_7		.700				
Effectiveness_1		.978				
Effectiveness_3		.848				
Effectiveness_4	.877					
Effectiveness_5	.864					
Effectiveness_8			.865			
Effectiveness_10				.758		
Effectiveness_11F	.965					
Assessment_1	.774					
Assessment_2					.857	
Assessment_3		.985				
Assessment_4					.911	
Assessment_6					.963	

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing coaching_6 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.749
Material_3						.846
Material_6						.731
Advising_2			.872			
Advising_3			.842			
Advising_5			.832			
Coaching_2				.993		
Coaching_3				.765		
Coaching_7F				.715		
Supervision_1		.581		.330		
Supervision_2		.827				
Supervision_3	.649					
Supervision_4	.934					
Supervision_5					.812	
Supervision_7		.698				
Effectiveness_1		.977				
Effectiveness_3		.847				
Effectiveness_4	.871					
Effectiveness_5	.871					
Effectiveness_8			.860			
Effectiveness_10				.762		
Effectiveness_11F	.964					
Assessment_1	.737					
Assessment_2					.860	
Assessment_3		.984				
Assessment_4					.910	
Assessment_6					.971	

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing assessment_3 for cross loading

Pattern Matrix^a

	Component					
	1	2	3	4	5	6
Material_1						.784
Material_3						.868
Material_6						.709
Advising_2			.868			
Advising_3			.851			
Advising_5			.834			
Coaching_2					.983	
Coaching_3					.770	
Coaching_7F					.737	
Supervision_1		.598			.304	
Supervision_2		.881				
Supervision_3	.659					
Supervision_4	.937					
Supervision_5				.816		
Supervision_7		.757				
Effectiveness_1		1.007				
Effectiveness_3		.890				
Effectiveness_4	.868					
Effectiveness_5	.871					
Effectiveness_8			.862			
Effectiveness_10					.731	
Effectiveness_11F	.959					
Assessment_1	.733					
Assessment_2				.863		
Assessment_4				.909		
Assessment_6				.973		

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing Effectiveness_10 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.857
Material_3						.887
Material_6						.694
Advising_2			.858			
Advising_3			.861			
Advising_5			.838			
Coaching_2					.961	
Coaching_3					.786	
Coaching_7F					.745	
Supervision_1		.594			.319	
Supervision_2		.896				
Supervision_3	.687					
Supervision_4	.957					
Supervision_5				.808		
Supervision_7		.758				
Effectiveness_1		.999				
Effectiveness_3		.903				
Effectiveness_4	.877					
Effectiveness_5	.870					
Effectiveness_8			.864			
Effectiveness_11F	.948					
Assessment_1	.720					
Assessment_2				.864		
Assessment_4				.910		
Assessment_6				.973		

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing supervision_5 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.857
Material_3						.893
Material_6						.676
Advising_2			.847			
Advising_3			.871			
Advising_5			.844			
Coaching_2				.975		
Coaching_3				.795		
Coaching_7F				.760		
Supervision_1		.601				
Supervision_2		.901				
Supervision_3	.693					
Supervision_4	.941					
Supervision_7		.767				
Effectiveness_1		1.001				
Effectiveness_3		.914				
Effectiveness_4	.882					
Effectiveness_5	.859					
Effectiveness_8			.872			
Effectiveness_11F	.965					
Assessment_1	.729					
Assessment_2					.876	
Assessment_4					.923	
Assessment_6					.959	

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing assessment 1 for cross loading

Pattern Matrix^a

	Component					
	1	2	3	4	5	6
Material_1						.857
Material_3						.888
Material_6						.727
Advising_2			.866			
Advising_3			.856			
Advising_5			.837			
Coaching_2					.970	
Coaching_3					.790	
Coaching_7F					.750	
Supervision_1		.606			.304	
Supervision_2		.895				
Supervision_3	.663					
Supervision_4	.938					
Supervision_7		.762				
Effectiveness_1		1.002				
Effectiveness_3		.907				
Effectiveness_4	.881					
Effectiveness_5	.839					
Effectiveness_8			.850			
Effectiveness_11F	.926					
Assessment_2				.893		
Assessment_4				.934		
Assessment_6				.964		

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing Effectiveness_8 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.862
Material_3						.888
Material_6						.738
Advising_2				.931		
Advising_3				.820		
Advising_5				.783		
Coaching_2					.970	
Coaching_3					.813	
Coaching_7F					.771	
Supervision_1	.620					
Supervision_2	.903					
Supervision_3		.664				
Supervision_4		.939				
Supervision_7	.779					
Effectiveness_1	1.010					
Effectiveness_3	.905					
Effectiveness_4		.874				
Effectiveness_5		.835				
Effectiveness_11F		.927				
Assessment_2			.884			
Assessment_4			.940			
Assessment_6			.966			

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing supervion_3 for cross loading

Pattern Matrix^a

	Component					
	1	2	3	4	5	6
Material_1						.867
Material_3						.896
Material_6						.764
Advising_2				.931		
Advising_3				.815		
Advising_5				.783		
Coaching_2					.980	
Coaching_3					.826	
Coaching_7F					.775	
Supervision_1	.637					
Supervision_2	.928					
Supervision_4		.915				
Supervision_7	.787					
Effectiveness_1	1.029					
Effectiveness_3	.919					
Effectiveness_4		.870				
Effectiveness_5		.831				
Effectiveness_11F		.899				
Assessment_2			.881			
Assessment_4			.939			
Assessment_6			.965			

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern matrix after removing supervision_4 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1				.876		
Material_3				.903		
Material_6				.777		
Advising_2						.939
Advising_3						.800
Advising_5						.772
Coaching_2					.976	
Coaching_3					.826	
Coaching_7F					.774	
Supervision_1	.630					
Supervision_2	.926					
Supervision_7	.792					
Effectiveness_1	1.022					
Effectiveness_3	.921					
Effectiveness_4			.869			
Effectiveness_5			.817			
Effectiveness_11F			.922			
Assessment_2		.885				
Assessment_4		.930				
Assessment_6		.961				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing effectiveness_3 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.892
Material_3						.940
Material_6						.705
Advising_2					.920	
Advising_3					.837	
Advising_5					.787	
Coaching_2				.975		
Coaching_3				.847		
Coaching_7F				.805		
Supervision_1	.716					
Supervision_2	.903					
Supervision_7	.802					
Effectiveness_1	1.018					
Effectiveness_4			.882			
Effectiveness_5			.826			
Effectiveness_11F			.936			
Assessment_2		.892				
Assessment_4		.940				
Assessment_6		.963				

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Pattern Matrix after removing effectiveness_1 for cross loading

Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Material_1						.892
Material_3						.934
Material_6						.686
Advising_2					.908	
Advising_3					.845	
Advising_5					.788	
Coaching_2				.947		
Coaching_3				.824		
Coaching_7F				.822		
Supervision_1			.769			
Supervision_2			.869			
Supervision_7			.884			
Effectiveness_4		.892				
Effectiveness_5		.831				
Effectiveness_11F		.953				
Assessment_2	.886					
Assessment_4	.938					
Assessment_6	.961					

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

- Summary of items deleted

Deleted Item name	Item deleted	Cross loading with item names	Cross loading with items	Justification for removing
Advising_1	Before the start of the competency program, I had a good understanding of how it would fit my job	• Coaching_1 • Supervision_1 • Supervision_2 • Supervision_7 • Effectiveness_1 • Effectiveness_3 • Verification_3 • Assessment_3	• Coaching_1: My coach provides me with the required feedback regarding my performance • Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks • Supervision_2: My supervisor regularly discusses my training and development needs with me • Effectiveness_1: The program is useful for my career development • Effectiveness_3: My knowledge and skills have increased as a result of the program • Verification_3: The verification process helps me become competent	This item should load under the advising items. But the wording of the item made it relevant to the other items

			• Assessment_3: The assessment process helps me become more competent	
Effectiveness_9	The knowledge and skills gained are directly applicable to my job	• Coaching_1 • Supervision_1 • Supervision_2 • Supervision_7 • Verification_3 • Assessment_3	• Coaching_1: My coach provides me with the required feedback regarding my performance • Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks • Supervision_2: My supervisor regularly discusses my training and development needs with me • Verification_3: The verification process helps me become competent • Assessment_3: The assessment process helps me become more competent	This items should load under the effectiveness construct but the wording made it relevant to other items
Material_5	The program content and material are well suited to the objectives of the program	• Supervision_5 • Effectiveness_7 • Verification_2 • Verification_4 • Verification_5 • Verification_6 • Assessment_2 • Assessment_4 • Assessment_5	• Supervision_5: My supervisor regularly discusses the content and benefits of the program with me • Effectiveness_7: I would recommend this program to other employees who have the opportunity	This items should load under the material construct but the wording made it relevant to the other items.

• Assessment_6	• Verification_2: The verification process is comprehensive and measures all the important dimensions of the program • Verification_4: The questions asked during the verification are relevant and appropriate to the content and the material covered in the program • Verification_5: I am satisfied with the feedback provided at the end of the verification • Verification_6: In general, I am satisfied with the verification process exercised/applied during my development program • Assessment_2: The assessment process is comprehensive and measures all the important dimensions of the program • Assessment_4: The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program • Assessment_5: I am satisfied with the feedback provided at the end of the assessment

			• Assessment_6: In general, I am satisfied with the assessment process exercised/applied during my development program	
Material_4	The program content meets the stated objectives	• Advising_2 • Supervision_6 • Effectiveness_6 • Verification_5 • Verification_6 • Assessment_5	• Advising_2: The expected outcomes of the program were well clarified at the beginning of the program by the advisor • Supervision_6: My supervisor shows interest in my progress and what I learn in the program • Effectiveness_6: The program provides trainees with the experience required for the job • Verification_5: I am satisfied with the feedback provided at the end of the verification • Verification_6: In general, I am satisfied with the verification process exercised/applied during my development program • Assessment_5: I am satisfied with the feedback provided at the end of the assessment	This items should load under the material construct but the wording made it relevant to the other items.
Coaching_5	My coach helps me to finish assignments that	• Material_1 • Material_3 • Effectiveness_2 • Verification_4	• Material_1: The content and material covered in the program are relevant to my job	The item should load under the coaching construct but

	otherwise would have been difficult to complete		• Material_3: The program objectives, content and material are in line with my job needs • Effectiveness_2: What I learn in the program closely matches my job requirements • Verification_4: The questions asked during the verification are relevant and appropriate to the content and the material covered in the program	the wording made it relevant to these items
Verification_4	The questions asked during the verification are relevant and appropriate to the content and the material covered in the program	• Assessment 4	• Assessment 4: The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program	Conceptually, the assessment and the verification process is almost the same and the wording of the item is similar also
Effectiveness_2	What I learn in the program closely matches my job requirements	• Material_1 • Material_3 • Material_6	• Material_1: The content and material covered in the program are relevant to my job • Material_3: The program objectives, content and material are in line with my job needs • Material_6: In general, I am satisfied with the program goals, content and material used	The item should load under the effectiveness construct but the wording made it relevant to these items

Verificatioin_5	I am satisfied with the feedback provided at the end of the verification	• Assessment_5	I am satisfied with the feedback provided at the end of the assessment	Conceptually, the assessment and the verification process is almost the same and the wording of the item is similar also
Verification_6	In general, I am satisfied with the verification process exercised/applied during my development program	• Assessment_6	In general, I am satisfied with the assessment process exercised/applied during my development program	Conceptually, the assessment and the verification process is almost the same and the wording of the item is similar also
Assessment_5	I am satisfied with the feedback provided at the end of the assessment	• Effectiveness_6 • Supervision_6	• Effectiveness_6: The program provides trainees with the experience required for the job • Supervision_6: My supervisor shows interest in my progress and what I learn in the program	The item should load under the assessment construct but the wording made it relevant to these items
Effectiveness_7	I would recommend this program to other employees who have the opportunity	• Supervision_6	Supervision_6: My supervisor shows interest in my progress and what I learn in the program	The item should load under the effectiveness construct but the wording made it relevant to this item.
Coaching_1	My coach provides me with the required feedback regarding my performance	• Supervision_1 • Supervision_2 • Supervision_7 • Effectiveness_1 • Effectivness_3 • Verification_3 • Assessment_3	• Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks • Supervision_2: My supervisor regularly discusses my training	The item should load under the coaching construct but the wording made it relevant to these items

			and development needs with me • Supervision_7: In general, I am satisfied with the supervision exercised/applied during my development program • Effectiveness_1: The program is useful for my career development • Effectivness_3: My knowledge and skills have increased as a result of the program • Verification_3: The verification process helps me become competent • Assessment_3: The assessment process helps me become more competent	
Effectiveness_6	The program provides trainees with the experience required for the job	• Supervision_6	Supervision_6: My supervisor shows interest in my progress and what I learn in the program	The item should load under the effectiveness construct but the wording made it relevant to these items
Supervision_6	My supervisor shows interest in my progress and what I learn in the program	• Advising_2	Advising_2: The expected outcomes of the program were well clarified at the beginning of the program by the advisor	The item should load under the supervision construct but the wording made it relevant to these items

Coaching_4	The way my coach guides me through the material makes me feel more confident to apply it on the job	• Material_1 • Material_2 • Material_3 • Material_6	• Material_1: The content and material covered in the program are relevant to my job • Material_2: It is easy to understand the content of the program • Material_3: The program objectives, content and material are in line with my job needs • Material_6: In general, I am satisfied with the program goals, content and material used	The item should load under the coaching construct but the wording made it relevant to these items
Material_2	It is easy to understand the content of the program	• Advising_4 • Coaching_6 • Superivison_3 • Supervision_4 • Effectiveness_4 • Effectiveness_5 • Effectiviness_11F • Verification_3 • Assessment_1	• Advising_4: My advisor monitors my progress regularly • Coaching_6: My coach explains the material clearly to me • Superivison_3: My supervisor reviews my progress on tasks and development goals with me at timely intervals • Supervision_4: My supervisor meets with me to discuss the ways of implementing what I learn on the job • Effectiveness_4: The program allows me to develop specific skills that I can use on the job	The item should load under the material construct but the wording made it relevant to these items

			• Effectiveness_5: The program prepares me to be more effective on my job • Effectiviness_11F: In general, the program is very effective • Verification_3 • Assessment_1: I clearly understand my strengths and weaknesses as a result of the assessment process applied	
Verification_2	The verification process is comprehensive and measures all the important dimensions of the program	• Assessment_2	The assessment process is comprehensive and measures all the important dimensions of the program	Conceptually, the assessment and the verification process is almost the same and the wording of the item is similar also
Verification_1	The new skills covered in the program are well tested by the verifier to ensure that I am competent	• Assessment_1	Assessment_1: I clearly understand my strengths and weaknesses as a result of the assessment process applied	Conceptually, the assessment and the verification process is almost the same
Verification_3	The verification process helps me become competent	• Assessment_3	The assessment process helps me become more competent	Conceptually, the assessment and the verification process is almost the same
Advising_4	My advisor monitors my progress regularly	• Coaching_6 • Supervision_3 • Supervision_4 • Effectiveness_4	• Coaching_6: My coach explains the material clearly to me	The item should load under the advising construct but the

		• Effectiveness_5 • Effectiveness_11F • Assessment_1	• Supervision_3: My supervisor reviews my progress on tasks and development goals with me at timely intervals • Supervision_4: My supervisor meets with me to discuss the ways of implementing what I learn on the job • Effectiveness_4: The program allows me to develop specific skills that I can use on the job • Effectiveness_5: The program prepares me to be more effective on my job • Effectiveness_11F: In general, the program is very effective • Assessment_1: I clearly understand my strengths and weaknesses as a result of the assessment process applied	wording made it relevant to these items
Coaching_6	My coach explains the material clearly to me	• Supervision_3 • Supervision_4 • Effectiveness_4 • Effectiveness_5 • Effectiveness_11F • Assessment_1	• Supervision_3: My supervisor reviews my progress on tasks and development goals with me at timely intervals • Supervision_4: My supervisor meets with me to discuss the ways of implementing what I learn on the job	The item should load under the coaching construct but the wording made it relevant to these items

			• Effectiveness_4: The program allows me to develop specific skills that I can use on the job • Effectiveness_5: The program prepares me to be more effective on my job • Effectiveness_11F: In general, the program is very effective • Assessment_1: I clearly understand my strengths and weaknesses as a result of the assessment process applied	
Assessment_3	The assessment process helps me become more competent	• Supervision_1 • Supervision_2 • Supervision_7 • Effectiveness_1 • Effectiveness_3	• Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks • Supervision_2: My supervisor regularly discusses my training and development needs with me • Supervision_7: In general, I am satisfied with the supervision exercised/applied during my development program • Effectiveness_1: The program is useful for my career development • Effectiveness_3	The item should load under the assessment construct but the wording made it relevant to these items

Effectiveness_10	The program helps prepare for better career opportunities within the company in the future	• Coaching_2 • Coaching_3 • Coaching_7F • Supervision_1	• Coaching_2: My coach is knowledgeable and helpful in providing support and direction • Coaching_3: My coach gives supportive comments to improve my behavior • Coaching_7F: In general, I am satisfied with the coaching process exercised/applied during my development program • Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks	The item should load under the effectiveness construct but the wording made it relevant to these items
Supervision_5	My supervisor regularly discusses the content and benefits of the program with me	• Assessment_4 • Assessment_5 • Assessment_6	• Assessment_4: The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program • Assessment_5: I am satisfied with the feedback provided at the end of the assessment • Assessment_6: In general, I am satisfied with the assessment process exercised/applied during my development program	The item should load under the supervision construct but the wording made it relevant to these items
Assessment_1	I clearly understand my strengths and weaknesses	• Supervision_3 • Supervision_4	• Supervision_3: My supervisor reviews my progress on tasks	The item should load under the assessment construct but

	as a result of the assessment process applied	• Effectiveness_4 • Effectiveness_5 • Effectiveness_11F	and development goals with me at timely intervals • Supervision_4: My supervisor meets with me to discuss the ways of implementing what I learn on the job • Effectiveness_4: The program allows me to develop specific skills that I can use on the job • Effectiveness_5: The program prepares me to be more effective on my job • Effectiveness_11F: In general, the program is very effective	the wording made it relevant to these items
Effectiveness_8	The program has helped me improve my performance	• Advising_2 • Advising_3 • Advising_5	• Advising_2: The expected outcomes of the program were well clarified at the beginning of the program by the advisor • Advising_3: My advisor is supportive in solving problems that arise from time to time during the program • Advising_5: In general, I am satisfied with the advising process exercised/applied during my development program	The item should load under the effectiveness construct but the wording made it relevant to these items
Supervision_3	My supervisor reviews my progress on tasks and	• Effectiveness_4 • Effectiveness_5 • Effectiveness_11F	• Effectiveness_4: The program allows me to develop specific skills that I can use on the job	The item should load under the supervision construct but

	development goals with me at timely intervals		• Effectiveness_5: The program prepares me to be more effective on my job • Effectiveness_11F: In general, the program is very effective	the wording made it relevant to these items
Supervision_4	My supervisor meets with me to discuss the ways of implementing what I learn on the job	• Effectiveness_4 • Effectiveness_5 • Effectiveness_11F	• Effectiveness_4: The program allows me to develop specific skills that I can use on the job • Effectiveness_5: The program prepares me to be more effective on my job • Effectiveness_11F: In general, the program is very effective	The item should load under the supervision construct but the wording made it relevant to these items
Effectiveness_3	My knowledge and skills have increased as a result of the program	• Supervision_1 • Supervision_2 • Supervision_7	• Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks • Supervision_2: My supervisor regularly discusses my training and development needs with me • Supervision_7: In general, I am satisfied with the supervision exercised/applied during my development program	The item should load under the effectiveness construct but the wording made it relevant to these items
Effectiveness_1	The program is useful for my career development	• Supervision_1 • Supervision_2 • Supervision_7	• Supervision_1: My supervisor explains to me the link between the competency framework and the job tasks	The item should load under the effectiveness construct but the wording made it relevant to these items

- Supervision_2: My supervisor regularly discusses my training and development needs with me
- Supervision_7: In general, I am satisfied with the supervision exercised/applied during my development program

Appendix VI: Confirmatory Factor Analysis

Final Pattern Matrix:

Pattern Matrix[a]

	Component					
	Assessment	Effectiveness	Supervision	Coaching	Advising	Material
1. The content and material covered in the program are relevant to my job						.892
3. The program objectives, content and material are in line with my job needs						.934
6. In general, I am satisfied with the program goals, content and material used						.686
2. The expected outcomes of the program were well clarified at the beginning of the program by the advisor					.908	
3. My advisor is supportive in solving the problems that arise from time to time during the program					.845	
5. In general, I am satisfied with the advising process exercised/applied during my development program					.788	
2. My coach is knowledgeable and helpful in providing support and direction				.947		
3. My coach gives supportive comments to improve my behavior				.824		

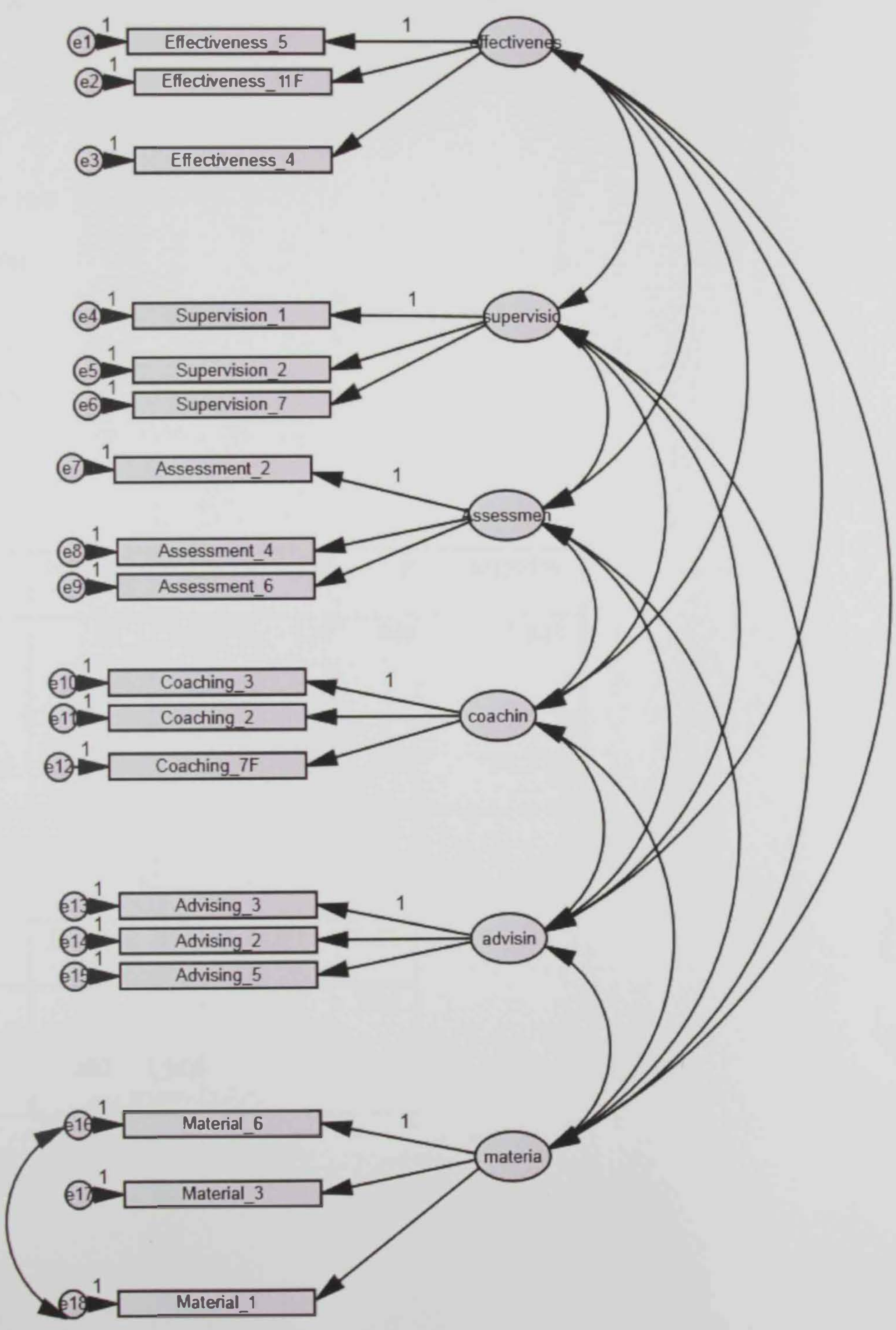
7. In general, I am satisfied with the coaching process exercised/applied during my development program				.822		
1. My supervisor explains to me the link between the competency framework and the job tasks			.769			
2. My supervisor regularly discusses my training and development needs with me			.869			
7. In general, I am satisfied with the supervision exercised/applied during my development program			.884			
4. The program allows me to develop specific skills that I can use on the job		.892				
5. The program prepares me to be more effective on my job		.831				
11. In general, the program is very effective		.953				
2. The assessment process is comprehensive and measures all the important dimensions of the program	.886					
4. The questions asked during the assessment are relevant and appropriate to the content and the material covered in the program	.938					

6. In general, I am satisfied with the assessment process exercised/applied during my development program	.961					

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.



Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	171
Number of distinct parameters to be estimated:	52
Degrees of freedom (171 - 52):	119

Result (Default model)

Minimum was achieved

Chi-square = 338.041

Degrees of freedom = 119

Probability level = .000

Model Fit

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	52	338.041	119	.000	2.841
Saturated model	171	.000	0		
Independence model	18	5748.895	153	.000	37.574

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.054	.914	.876	.636
Saturated model	.000	1.000		

Model	RMR	GFI	AGFI	PGFI
Independence model	.644	.209	.116	.187

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.941	.924	.961	.950	.961
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.778	.732	.747
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	219.041	167.915	277.814
Saturated model	.000	.000	.000
Independence model	5595.895	5351.309	5846.816

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.904	.586	.449	.743
Saturated model	.000	.000	.000	.000

Model	FMIN	F0	LO 90	HI 90
Independence model	15.371	14.962	14.308	15.633

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.070	.061	.079	.000
Independence model	.313	.306	.320	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	442.041	447.607	646.241	698.241
Saturated model	342.000	360.304	1013.504	1184.504
Independence model	5784.895	5786.822	5855.580	5873.580

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.182	1.045	1.339	1.197
Saturated model	.914	.914	.914	.963
Independence model	15.468	14.814	16.139	15.473

HOELTER

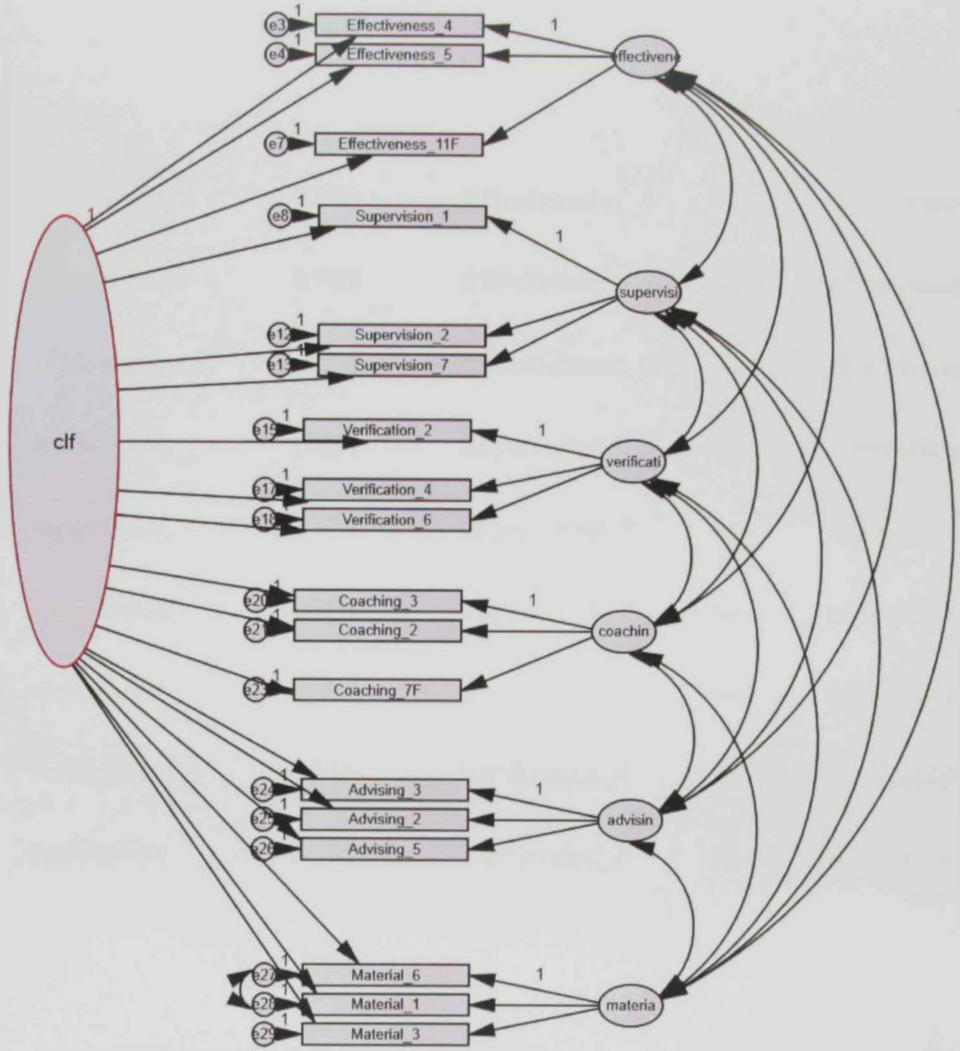
Model	HOELTER .05	HOELTER .01
Default model	161	175
Independence model	12	13

Execution time summary

Minimization:	.010
Miscellaneous:	1.121
Bootstrap:	.000
Total:	1.131

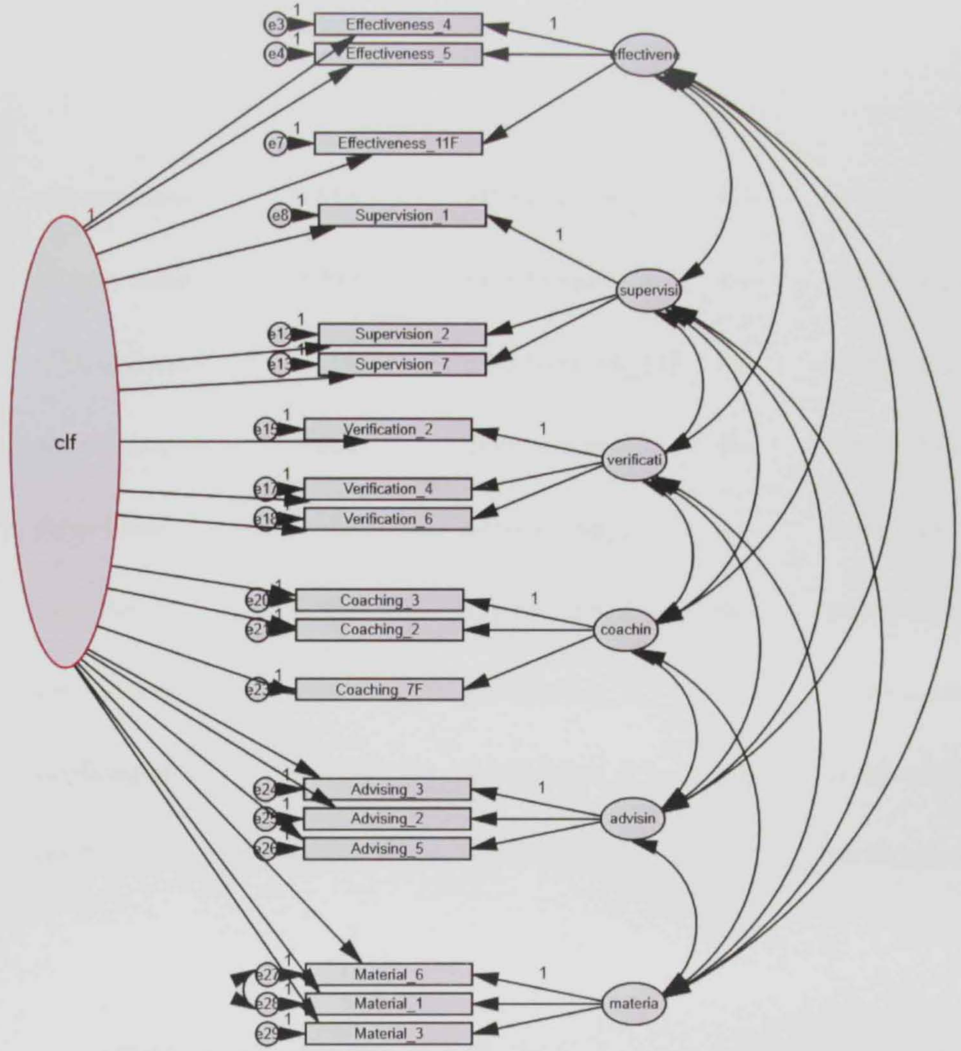
Common method bias

CFA with CLF



Common method bias

CFA with CLF



Standardized Regression Weights: (Group number 1 - Default model)

			CLF Estimate
Effectiveness_4	<---	effectiveness	0.855
Effectiveness_5	<---	effectiveness	0.909
Effectiveness_11F	<---	effectiveness	0.76
Supervision_1	<---	supervision	0.804
Supervision_2	<---	supervision	0.8
Supervision_7	<---	supervision	0.928
Verification_2	<---	verification	0.685
Verification_4	<---	verification	0.856
Verification_6	<---	verification	0.774

Standardized Regression Weights: (Group number 1 - Default model)

			no CLF Estimate	Difference (no CLF estimate - CLF estimate)
Effectiveness_4	<---	effectiveness	0.855	0
Effectiveness_5	<---	effectiveness	0.909	0
Effectiveness_11F	<---	effectiveness	0.76	0
Supervision_1	<---	supervision	0.804	0
Supervision_2	<---	supervision	0.8	0
Supervision_7	<---	supervision	0.928	0
Verification_2	<---	verification	0.685	0
Verification_4	<---	verification	0.856	0
Verification_6	<---	verification	0.774	0

Coaching_3	<---	Coaching	0.89	Coaching_3	<---	Coaching	0.89	0
Coaching_2	<---	Coaching	0.825	Coaching_2	<---	Coaching	0.825	0
Coaching_7F	<---	Coaching	0.798	Coaching_7F	<---	Coaching	0.798	0
Advising_3	<---	Advising	0.783	Advising_3	<---	Advising	0.783	0
Advising_2	<---	Advising	0.628	Advising_2	<---	Advising	0.628	0
Advising_5	<---	Advising	0.956	Advising_5	<---	Advising	0.956	0
Material_6	<---	Material	0.795	Material_6	<---	Material	0.795	0
Material_1	<---	Material	0.831	Material_1	<---	Material	0.831	0
Material_3	<---	Material	0.84	Material_3	<---	Material	0.84	0

Invariance Test:

- **Configural Invariance test**

Notes for model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 342

Number of distinct parameters to be estimated: 86

Degrees of freedom (342 - 86): 256

Result (Default model)

Minimum was achieved

Chi-square = 358.416

Degrees of freedom = 256

Probability level = .000

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	86	358.416	256	.000	1.400
Saturated model	342	.000	0		
Independence model	36	5762.974	306	.000	18.833

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.058	.909	.878	.680

Model	RMR	GFI	AGFI	PGFI
Saturated model	.000	1.000		
Independence model	.645	.209	.116	.187

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.938	.926	.981	.978	.981
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.837	.785	.821
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	102.416	56.461	156.408
Saturated model	.000	.000	.000
Independence model	5456.974	5213.785	5706.558

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.961	.275	.151	.419
Saturated model	.000	.000	.000	.000

Model	FMIN	F0	LO 90	HI 90
Independence model	15.450	14.630	13.978	15.299

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.033	.024	.040	1.000
Independence model	.219	.214	.224	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	530.416	550.152		
Saturated model	684.000	762.485		
Independence model	5834.974	5843.236		

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.422	1.299	1.567	1.475
Saturated model	1.834	1.834	1.834	2.044
Independence model	15.643	14.991	16.312	15.666

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	308	326
Independence model	24	25

Execution time summary

Minimization: .015

Miscellaneous: 2.431

Bootstrap: .000

Total: 2.446

- **Chi-square invariance test (metric test)**

	Chi-square	df	p-val	Invariant?	Step 1. provide chi-square and df for unconstrained and constrained models, and provide the number of groups. The thresholds (green cells) will be updated automatically.
Overall Model					
Unconstrained	355.75	238			
Fully constrained	358.416	256			
Number of groups		2			
Difference	**2.666**	**18**	**1.000**	**YES**	Groups are not different at the model level, however, they may be different at the path level.
Chi-square Thresholds					
90% Confidence	358.46	239			Any chi-square more than the threshold (Green Cells) will be variant for a path by path analysis
Difference	**2.71**	**1**	0.100		
95% Confidence	359.59	239			
Difference	**3.84**	**1**	0.050		
99% Confidence	362.38	239			
Difference	**6.63**	**1**	0.010		

- **Multigroup invariance test**

			3-4 Years		1-2 Years		
			Estimate	P	Estimate	P	z-score
Effectiveness_5	<---	effectiveness	1.050	0.000	1.036	0.000	-0.152
Effectiveness_11F	<---	effectiveness	0.921	0.000	0.954	0.000	0.324
Supervision_1	<---	supervision	1.092	0.000	1.100	0.000	0.072
Supervision_2	<---	supervision	1.109	0.000	1.130	0.000	0.183
Supervision_7	<---	Supervision	1.183	0.000	1.190	0.000	0.062
Assessment_4	<---	Assessment	0.919	0.000	0.981	0.000	0.776
Assessment_6	<---	Assessment	1.008	0.000	1.030	0.000	0.283
Coaching_3	<---	Coaching	1.184	0.000	1.154	0.000	-0.283
Coaching_2	<---	Coaching	1.064	0.000	1.037	0.000	-0.244
Coaching_7F	<---	Coaching	1.154	0.000	1.122	0.000	-0.258
Advising_3	<---	Advising	0.992	0.000	1.008	0.000	0.158
Advising_2	<---	Advising	0.722	0.000	0.725	0.000	0.026
Advising_5	<---	Advising	1.250	0.000	1.233	0.000	-0.170
Material_6	<---	Material	1.063	0.000	1.026	0.000	-0.308
Material_3	<---	Material	1.054	0.000	1.060	0.000	0.050
Material_1	<---	Material	0.970	0.000	0.969	0.000	-0.017
Effectiveness_4	<---	effectiveness	1.041	0.000	0.989	0.000	-0.560
Assessment_2	<---	Assessment	0.785	0.000	0.836	0.000	0.664

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Multivariate analysis

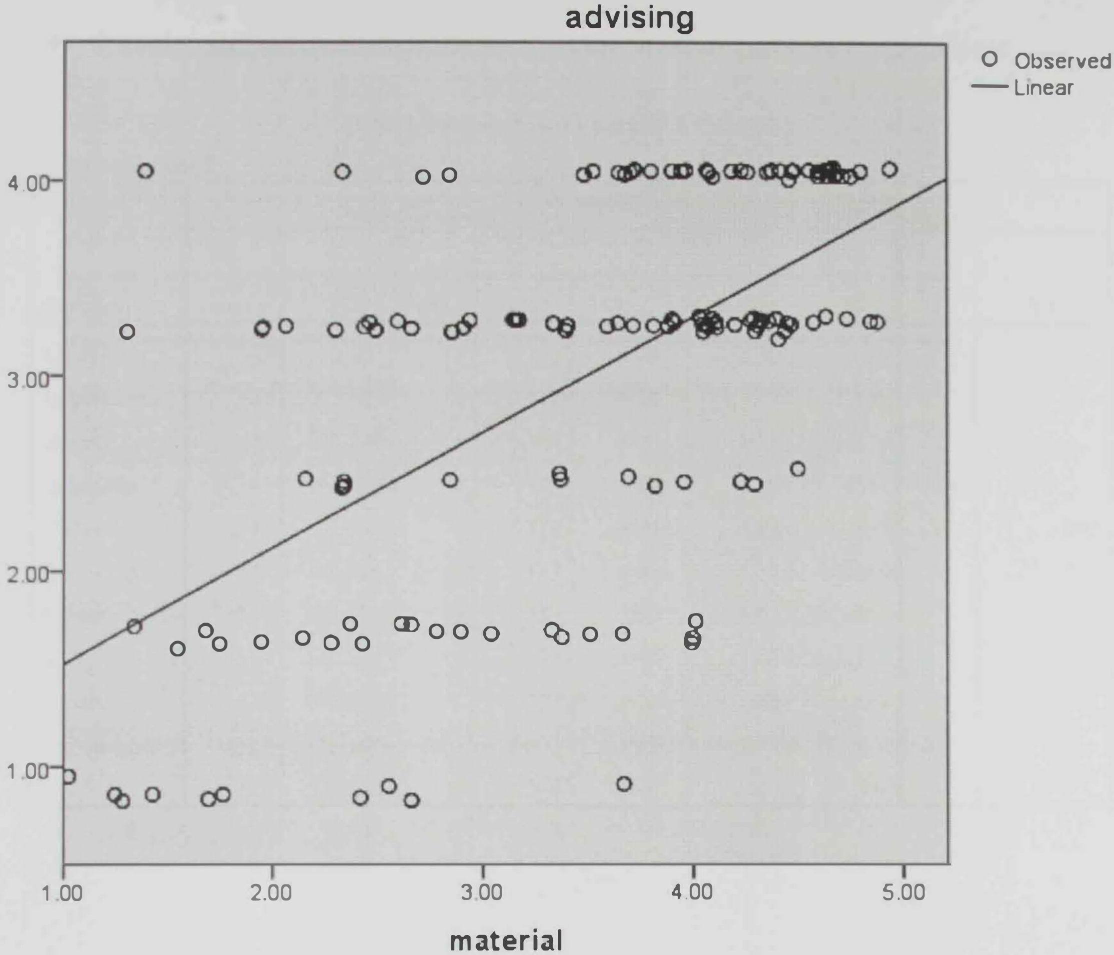
- **Linearity**
  - Relationship between competency model design and advising process

Model Summary and Parameter Estimates

Dependent Variable: advising process

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.355	205.270	1	373	.000	.932	.592		
Logarithmic	.345	196.618	1	373	.000	1.015	1.657		
Inverse	.311	168.055	1	373	.000	4.240	-3.828		
Quadratic	.355	102.383	2	372	.000	.997	.546	.007	
Cubic	.360	69.706	3	371	.000	-.630	2.458	-.667	.073
Compound	.363	212.953	1	373	.000	1.093	1.305		
Power	.373	221.533	1	373	.000	1.108	.766		
S	.356	205.996	1	373	.000	1.610	-1.823		
Growth	.363	212.953	1	373	.000	.089	.267		
Exponential	.363	212.953	1	373	.000	1.093	.267		
Logistic	.363	212.953	1	373	.000	.915	.766		

The independent variable is material.


advising
Observed
Linear
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material

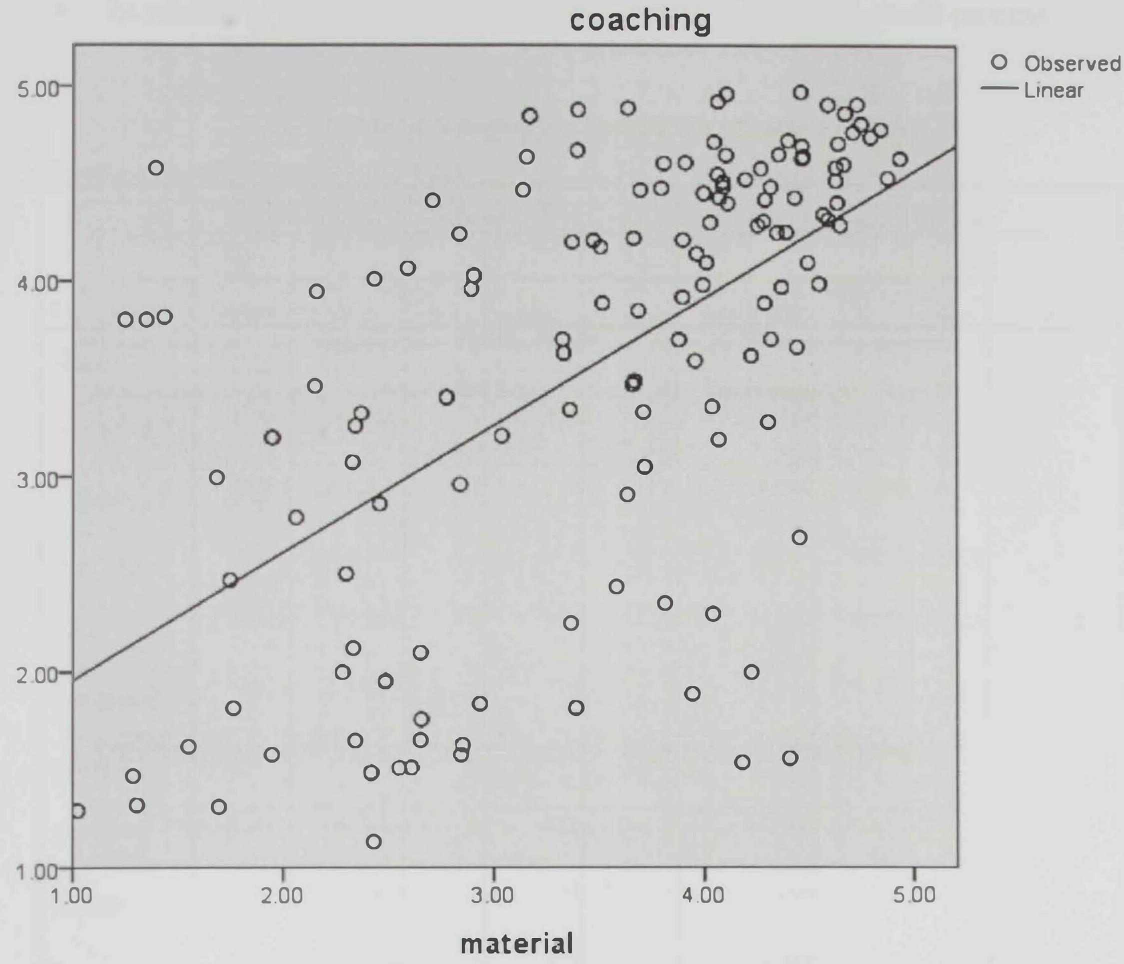
- Relationship between competency model design and coaching process

Model Summary and Parameter Estimates

Dependent Variable: coaching process

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.338	190.477	1	373	.000	1.306	.651		
Logarithmic	.307	165.281	1	373	.000	1.470	1.760		
Inverse	.251	125.249	1	373	.000	4.834	-3.878		
Quadratic	.345	98.066	2	372	.000	2.168	.034	.098	
Cubic	.347	65.841	3	371	.000	3.334	-1.337	.581	-.053
Compound	.321	176.605	1	373	.000	1.544	1.249		
Power	.302	161.523	1	373	.000	1.613	.611		
S	.259	130.221	1	373	.000	1.656	-1.377		
Growth	.321	176.605	1	373	.000	.434	.222		
Exponential	.321	176.605	1	373	.000	1.544	.222		
Logistic	.321	176.605	1	373	.000	.648	.801		

The independent variable is material.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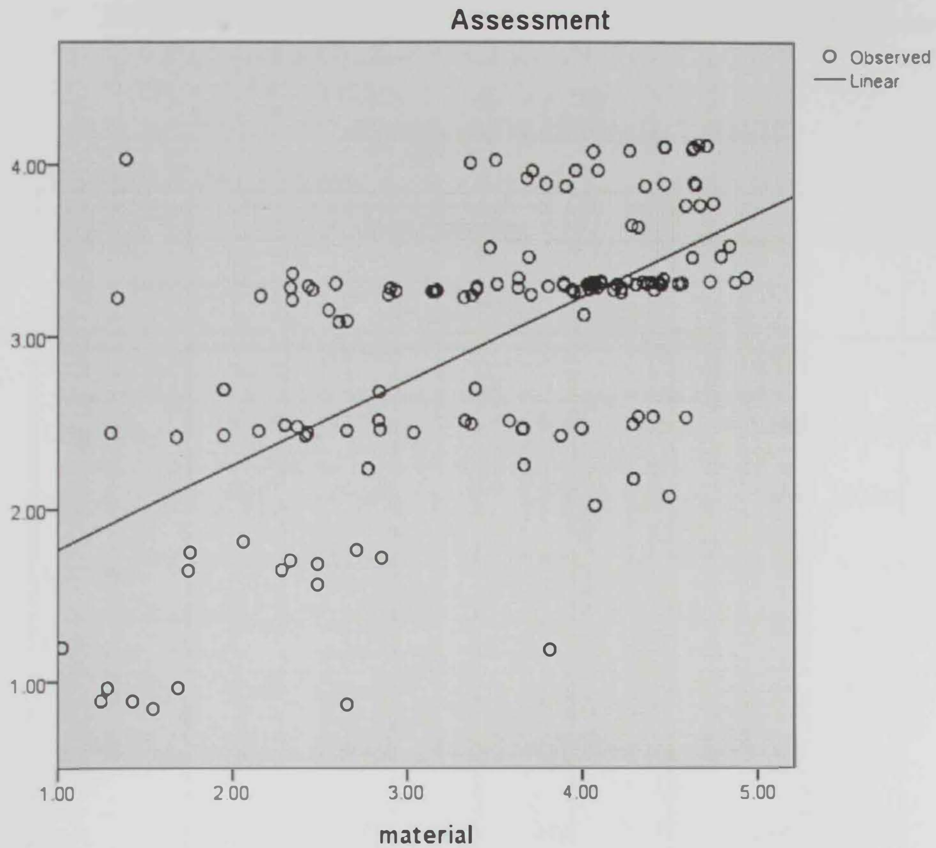
- Relationship between competency model design and assessment process

Model Summary and Parameter Estimates

Dependent Variable: Assessment process

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.376	224.815	1	373	0	1.279	0.487		
Logarithmic	0.382	230.129	1	373	0	1.313	1.392		
Inverse	0.358	208.322	1	373	0	4.044	-3.285		
Quadratic	0.381	114.389	2	372	0	0.783	0.842	-0.056	
Cubic	0.385	77.335	3	371	0	-0.323	2.142	-0.515	0.05
Compound	0.371	219.604	1	373	0	1.348	1.237		
Power	0.399	247.94	1	373	0	1.337	0.628		
S	0.401	249.212	1	373	0	1.538	-1.531		
Growth	0.371	219.604	1	373	0	0.298	0.213		
Exponential	0.371	219.604	1	373	0	1.348	0.213		
Logistic	0.371	219.604	1	373	0	0.742	0.808		

The independent variable is material.


Assessment
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material

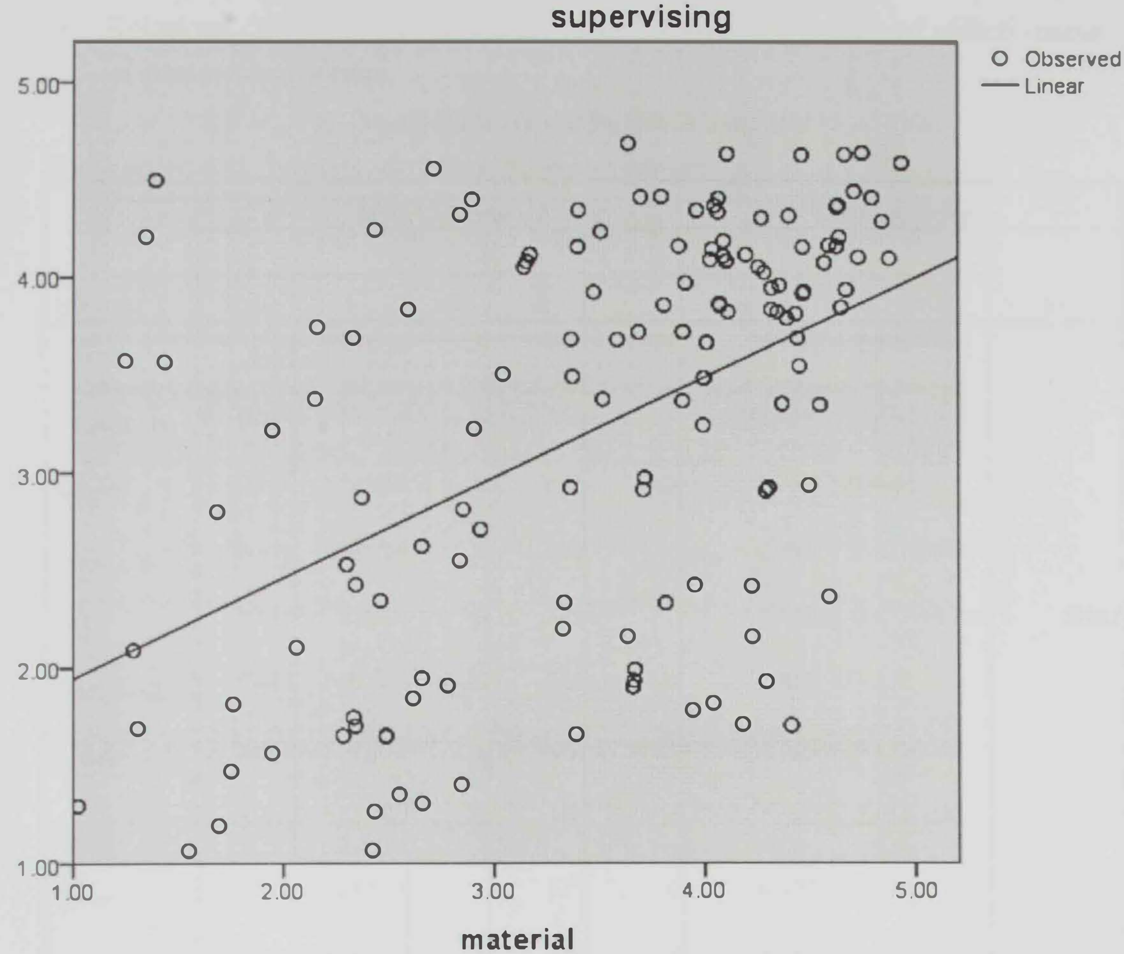
- Relationship between competency model design and supervision process

Model Summary and Parameter Estimates

Dependent Variable: supervision

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.239	117.432	1	373	0	1.431	0.514		
Logarithmic	0.208	97.792	1	373	0	1.598	1.358		
Inverse	0.161	71.629	1	373	0	4.168	-2.912		
Quadratic	0.257	64.441	2	372	0	2.706	-0.398	0.145	
Cubic	0.258	42.933	3	371	0	3.167	-0.94	0.336	-0.021
Compound	0.248	123.199	1	373	0	1.536	1.214		
Power	0.222	106.227	1	373	0	1.621	0.519		
S	0.178	80.734	1	373	0	1.471	-1.132		
Growth	0.248	123.199	1	373	0	0.429	0.194		
Exponential	0.248	123.199	1	373	0	1.536	0.194		
Logistic	0.248	123.199	1	373	0	0.651	0.824		

The independent variable is material.



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material

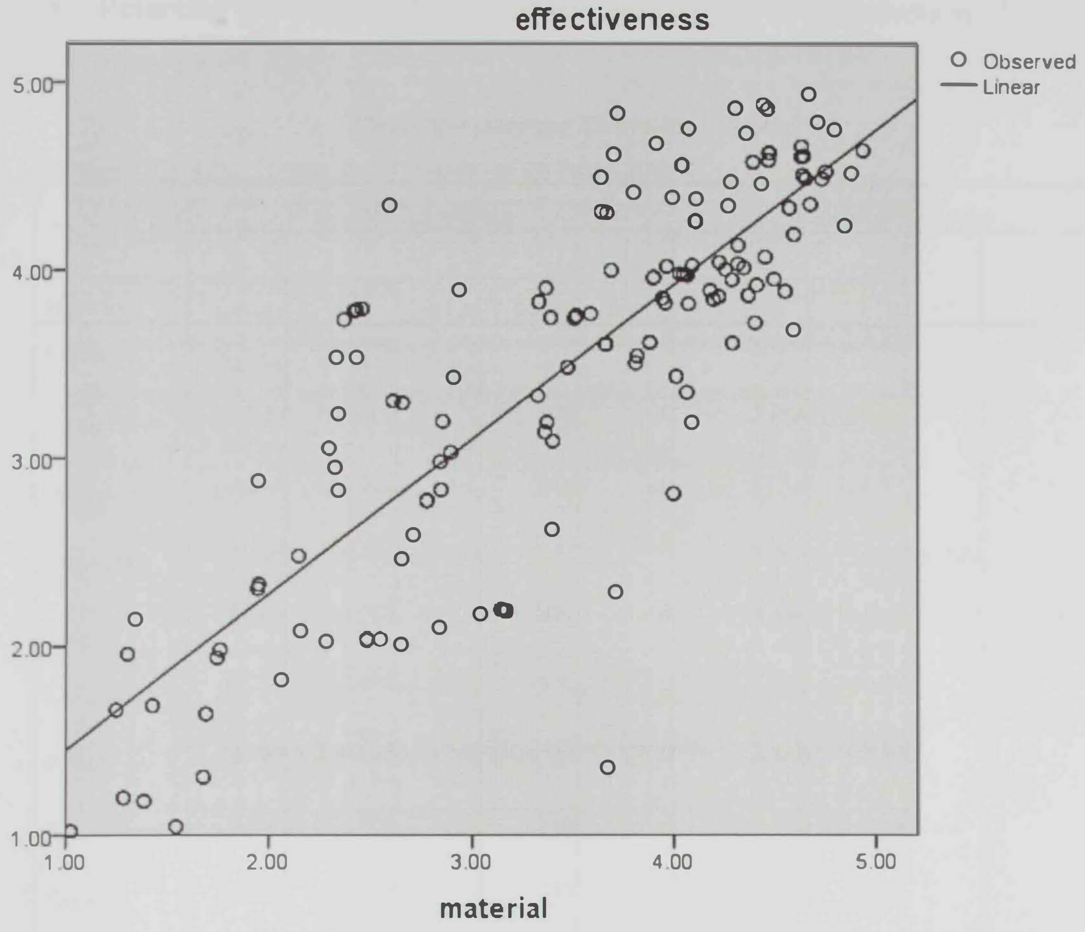
- Relationship between competency model design and perceived effectiveness of competency model

Model Summary and Parameter Estimates

Dependent Variable: Perceived effectiveness of competency model

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.67	755.653	1	373	0	0.626	0.825		
Logarithmic	0.663	734.199	1	373	0	0.716	2.329		
Inverse	0.607	575.458	1	373	0	5.263	-5.425		
Quadratic	0.671	378.993	2	372	0	0.299	1.059	-0.037	
Cubic	0.678	259.85	3	371	0	-1.538	3.217	-0.798	0.083
Compound	0.649	688.592	1	373	0	1.213	1.334		
Power	0.682	801.272	1	373	0	1.216	0.839		
S	0.669	754.615	1	373	0	1.856	-2.024		
Growth	0.649	688.592	1	373	0	0.193	0.288		
Exponential	0.649	688.592	1	373	0	1.213	0.288		
Logistic	0.649	688.592	1	373	0	0.824	0.75		

The independent variable is material.


effectiveness
Observed
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material

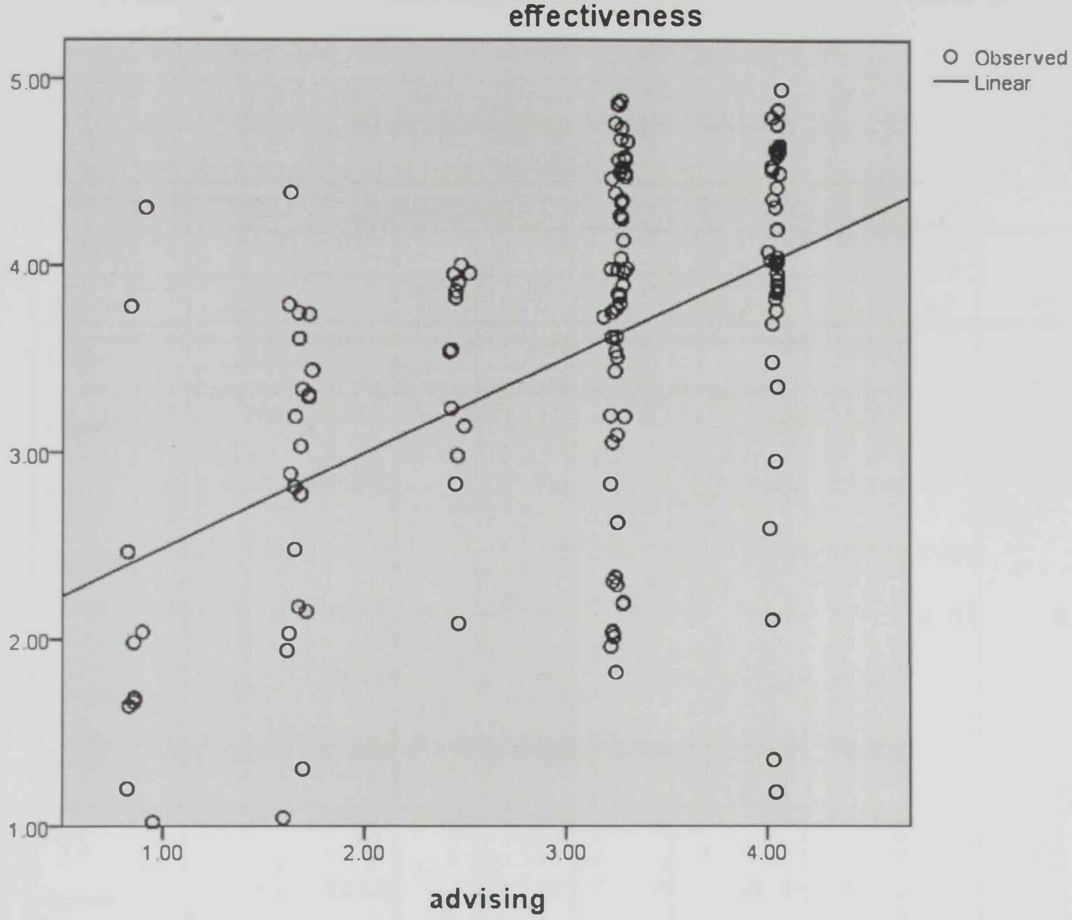
- Relationship between advising process and perceived effectiveness of competency model

Model Summary and Parameter Estimates

Dependent Variable: Perceived effectiveness of competency model

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.251	124.866	1	373	0	1.977	0.508		
Logarithmic	0.265	134.405	1	373	0	2.304	1.173		
Inverse	0.253	126.062	1	373	0	4.34	-2.07		
Quadratic	0.263	66.488	2	372	0	1.276	1.151	-0.123	
Cubic	0.266	44.727	3	371	0	0.605	2.166	-0.556	0.056
Compound	0.232	112.473	1	373	0	1.971	1.189		
Power	0.259	130.693	1	373	0	2.177	0.412		
S	0.263	132.957	1	373	0	1.503	-0.75		
Growth	0.232	112.473	1	373	0	0.678	0.173		
Exponential	0.232	112.473	1	373	0	1.971	0.173		
Logistic	0.232	112.473	1	373	0	0.507	0.841		

The independent variable is advising


effectiveness
Observed
Linear
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
advising

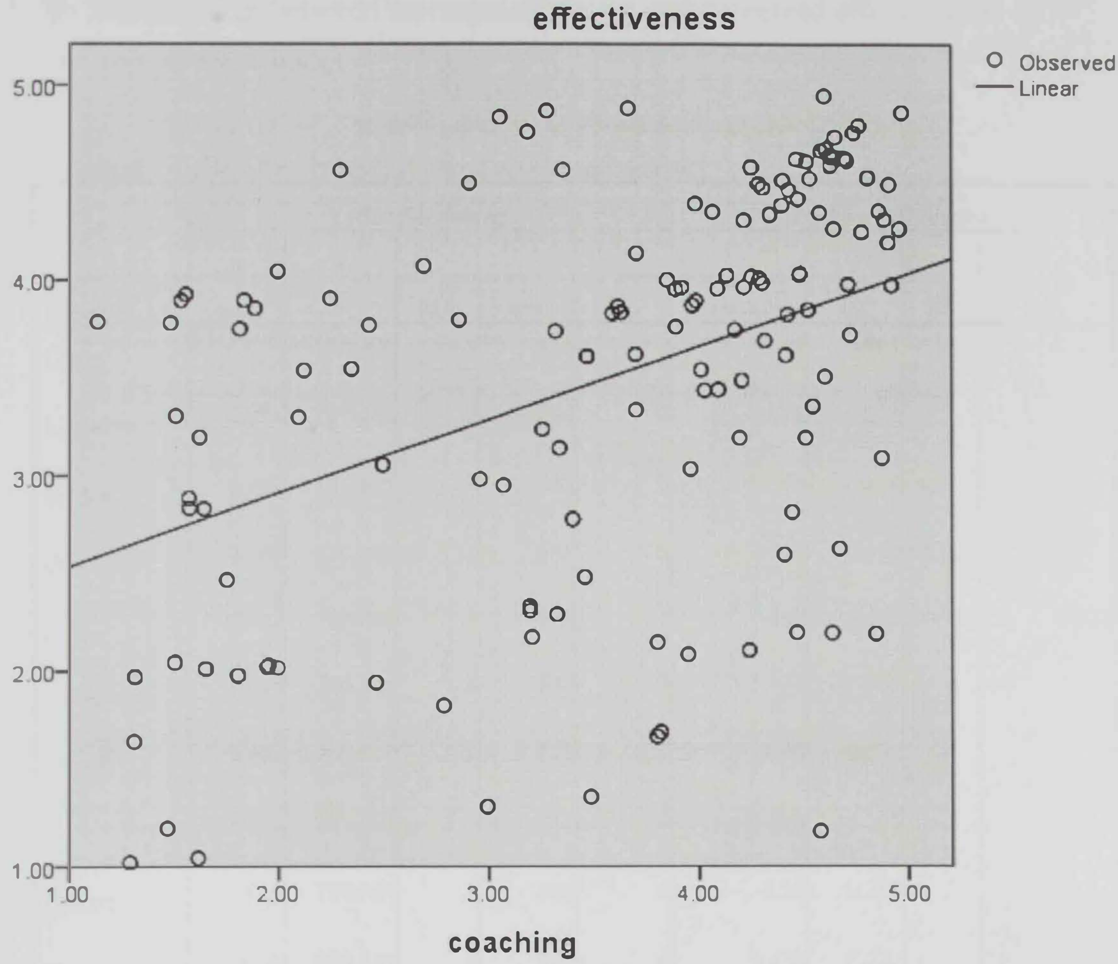
- Relationship between coaching process and perceived effectiveness of competency model

Model Summary and Parameter Estimates

Dependent Variable: Perceived effectiveness of competency model

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.173	78.169	1	373	0	2.159	0.375		
Logarithmic	0.169	75.755	1	373	0	2.221	1.057		
Inverse	0.158	69.841	1	373	0	4.333	-2.56		
Quadratic	0.174	39.076	2	372	0	2.316	0.259	0.018	
Cubic	0.18	27.091	3	371	0	0.249	2.611	-0.778	0.083
Compound	0.161	71.571	1	373	0	2.094	1.137		
Power	0.162	72.358	1	373	0	2.122	0.368		
S	0.158	69.927	1	373	0	1.494	-0.91		
Growth	0.161	71.571	1	373	0	0.739	0.128		
Exponential	0.161	71.571	1	373	0	2.094	0.128		
Logistic	0.161	71.571	1	373	0	0.478	0.88		

The independent variable is coaching


effectiveness
O Observed
Linear
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
coaching

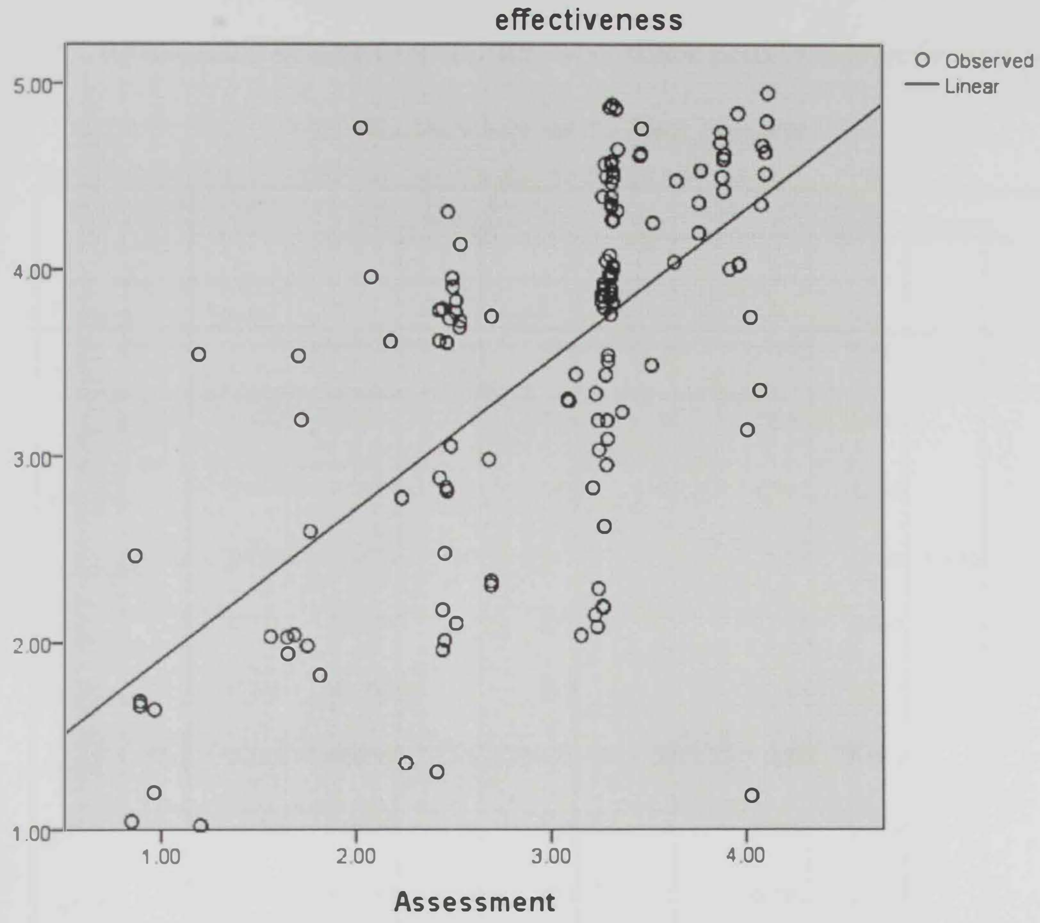
- Relationship between assessment process and perceived effectiveness of competency model

Model Summary and Parameter Estimates

Dependent Variable: Perceived effectiveness of competency model

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.4	248.406	1	373	0	1.11	0.803		
Logarithmic	0.391	239.443	1	373	0	1.625	1.801		
Inverse	0.342	193.485	1	373	0	4.685	-3.114		
Quadratic	0.402	124.842	2	372	0	0.775	1.092	-0.055	
Cubic	0.402	83.085	3	371	0	1.039	0.699	0.112	-0.022
Compound	0.39	238.614	1	373	0	1.433	1.325		
Power	0.407	255.914	1	373	0	1.68	0.652		
S	0.379	227.351	1	373	0	1.642	-1.165		
Growth	0.39	238.614	1	373	0	0.36	0.282		
Exponential	0.39	238.614	1	373	0	1.433	0.282		
Logistic	0.39	238.614	1	373	0	0.698	0.755		

The independent variable is Assessment


effectiveness
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
Assessment
Observed
Linear

- Relationship between supervision process and perceived effectiveness of

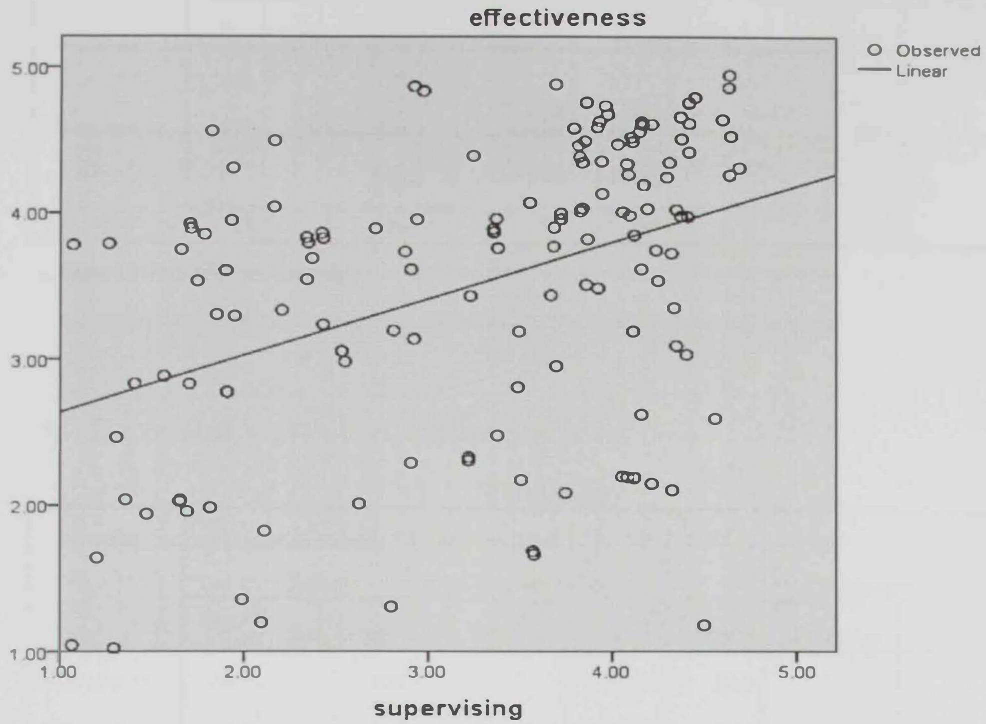
Model Summary and Parameter Estimates

Dependent Variable: Perceived effectiveness of competency model

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	0.163	72.548	1	373	0	2.251	0.387		
Logarithmic	0.167	74.968	1	373	0	2.327	1.062		
Inverse	0.164	73.313	1	373	0	4.397	-2.494		
Quadratic	0.165	36.679	2	372	0	1.86	0.69	-0.051	
Cubic	0.175	26.183	3	371	0	-0.473	3.504	-1.077	0.116
Compound	0.144	62.757	1	373	0	2.183	1.138		
Power	0.155	68.31	1	373	0	2.22	0.363		
S	0.16	71.078	1	373	0	1.513	-0.874		
Growth	0.144	62.757	1	373	0	0.781	0.129		
Exponential	0.144	62.757	1	373	0	2.183	0.129		
Logistic	0.144	62.757	1	373	0	0.458	0.879		

The independent variable is supervision

competency model



- Multicollinearity

▪ Dependent Variable: advising process

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
(Constant)	.482	.157		3.073	.002		
coaching	-.138	.066	-.155	-2.075	.039	.266	3.766
Assessment	.641	.060	.512	10.621	.000	.638	1.568
supervision	.341	.073	.360	4.695	.000	.253	3.957

a. Dependent Variable: advising

▪ Dependent Variable: coaching process

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.484	.121		4.002	.000		
Assessment	.177	.053	.126	3.357	.001	.504	1.985
supervision	.873	.036	.819	24.052	.000	.611	1.638
advising	-.083	.040	-.074	-2.075	.039	.557	1.795

a. Dependent Variable: coaching

- Dependent Variable: Assessment process

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.927	.109		8.479	.000		
supervision	.114	.056	.150	2.030	.043	.241	4.146
advising	.363	.034	.455	10.621	.000	.718	1.393
coaching	.166	.050	.234	3.357	.001	.270	3.697

a. Dependent Variable: Assessment

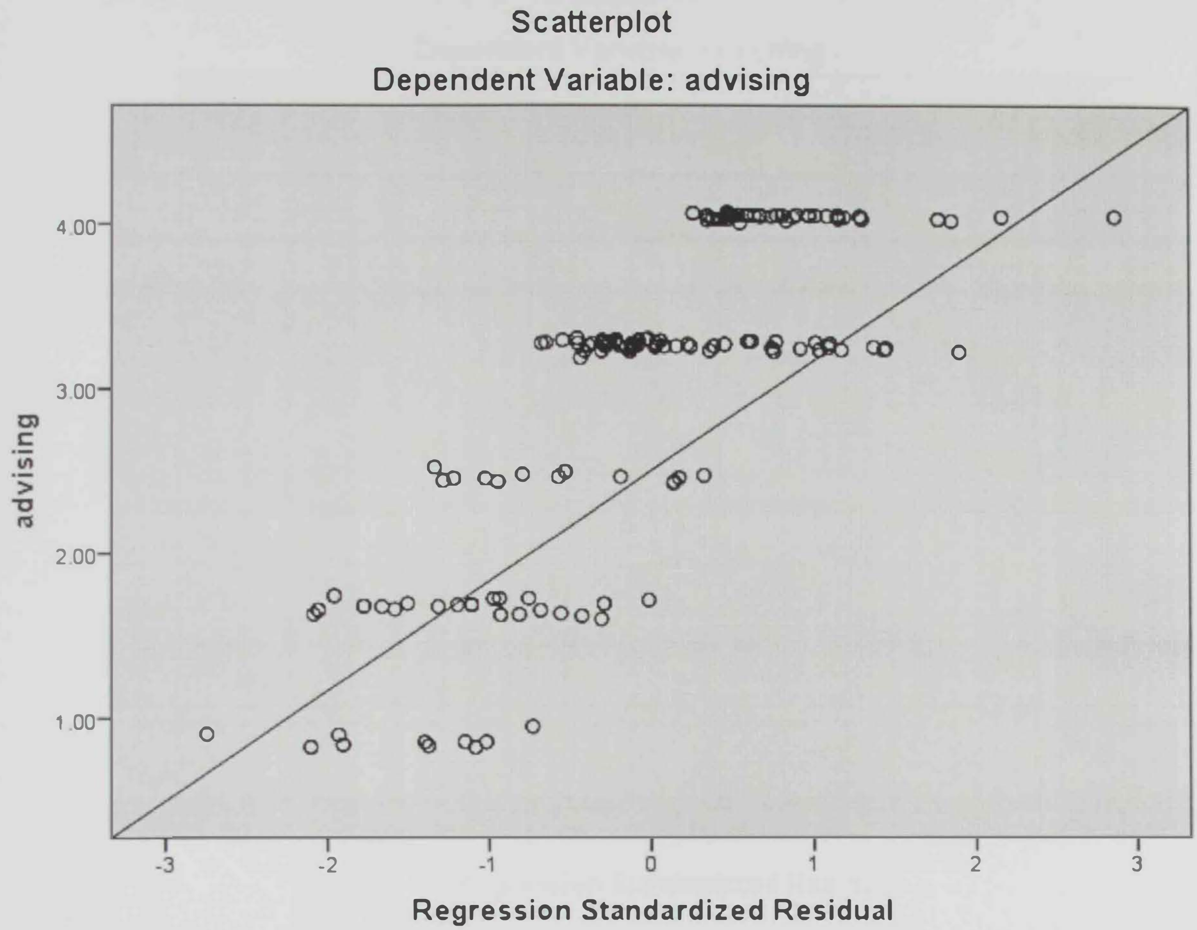
- Dependent Variable: supervision Process

Coefficients[a]

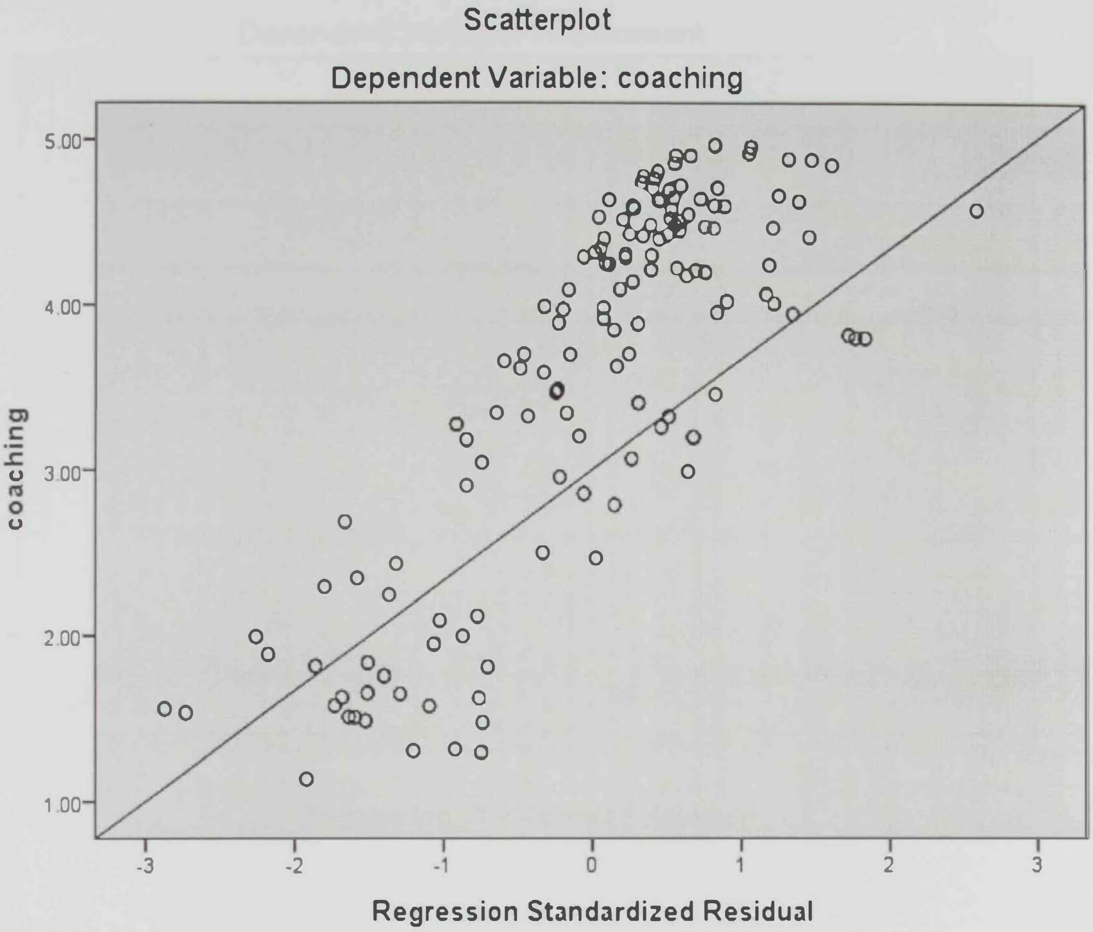
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.055	.110		-.495	.621		
advising	.165	.035	.156	4.695	.000	.583	1.714
coaching	.698	.029	.744	24.052	.000	.672	1.488
Assessment	.097	.048	.073	2.030	.043	.494	2.022

a. Dependent Variable: supervision

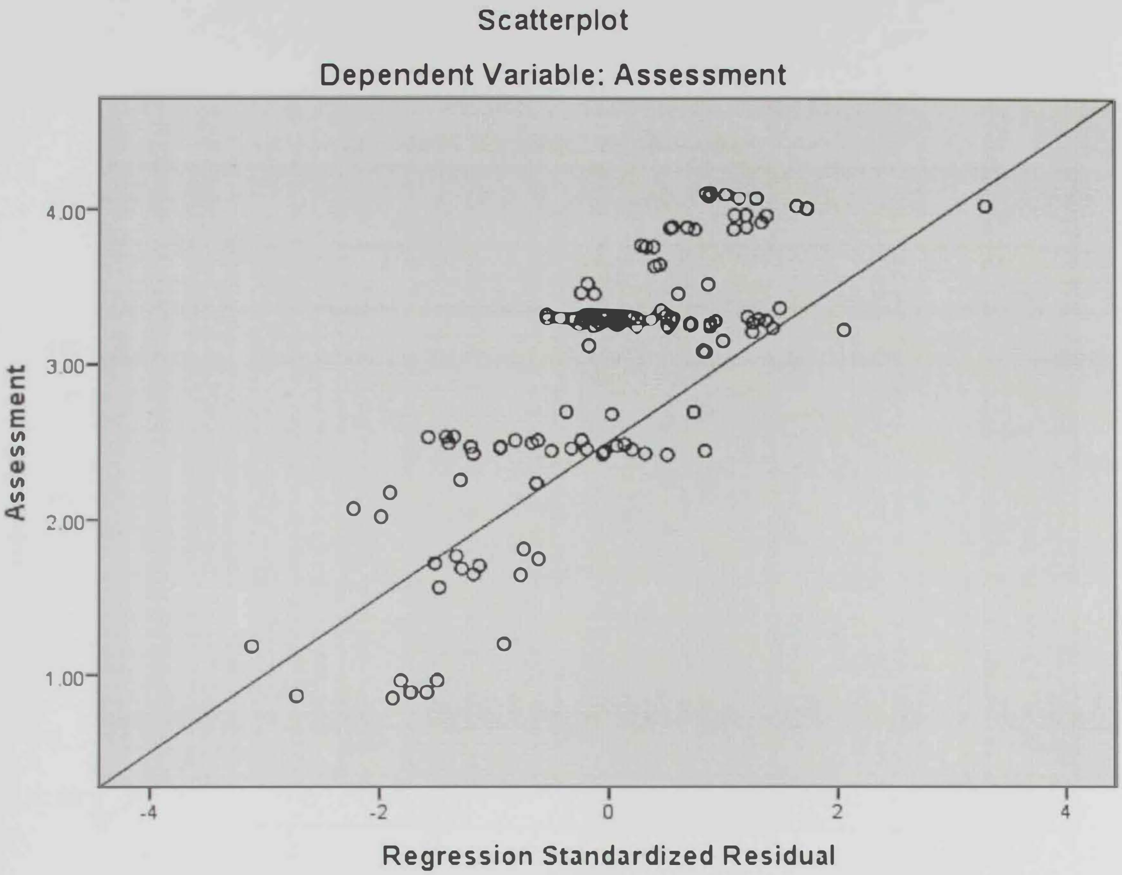
- Homoscedasticity
  - Dependent variable: advising process



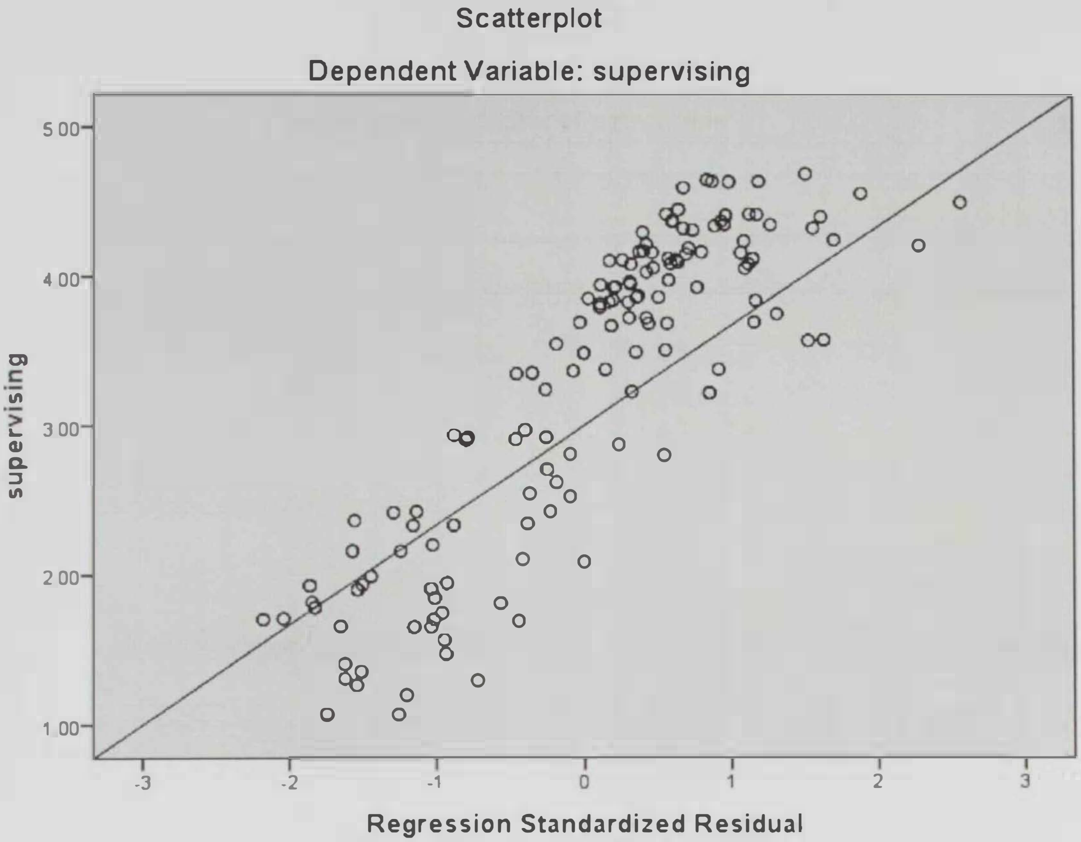
- Dependent variable: coaching process



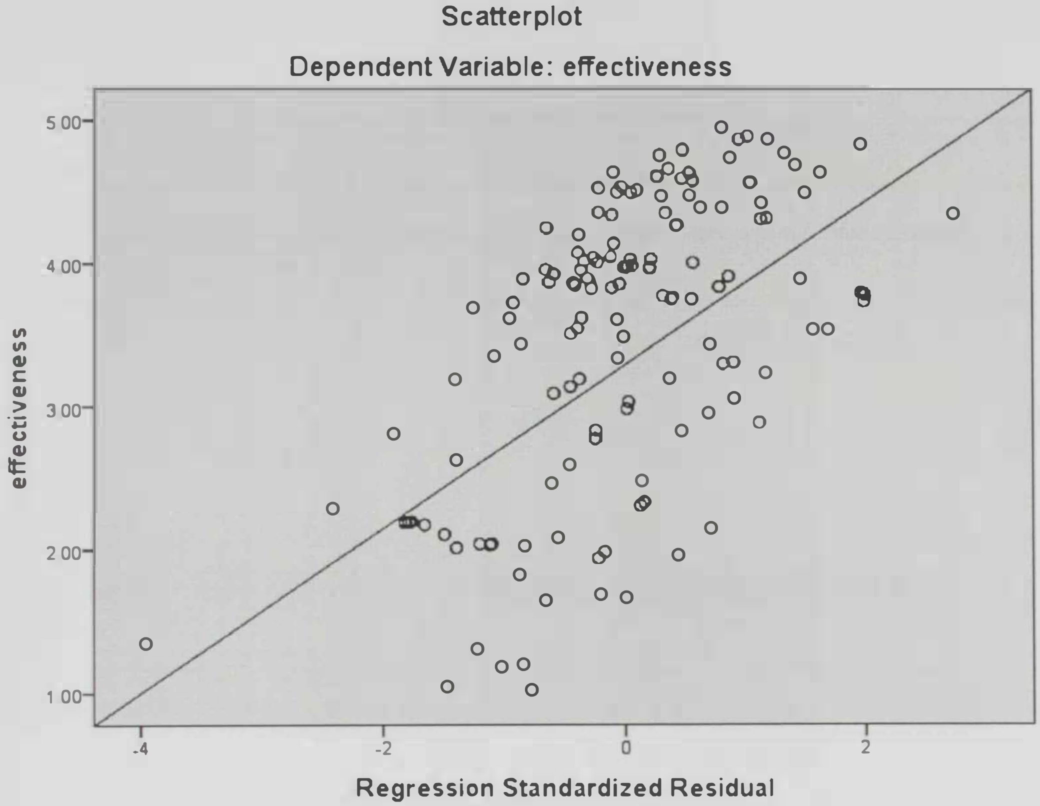
- Dependent variable: Assessment process



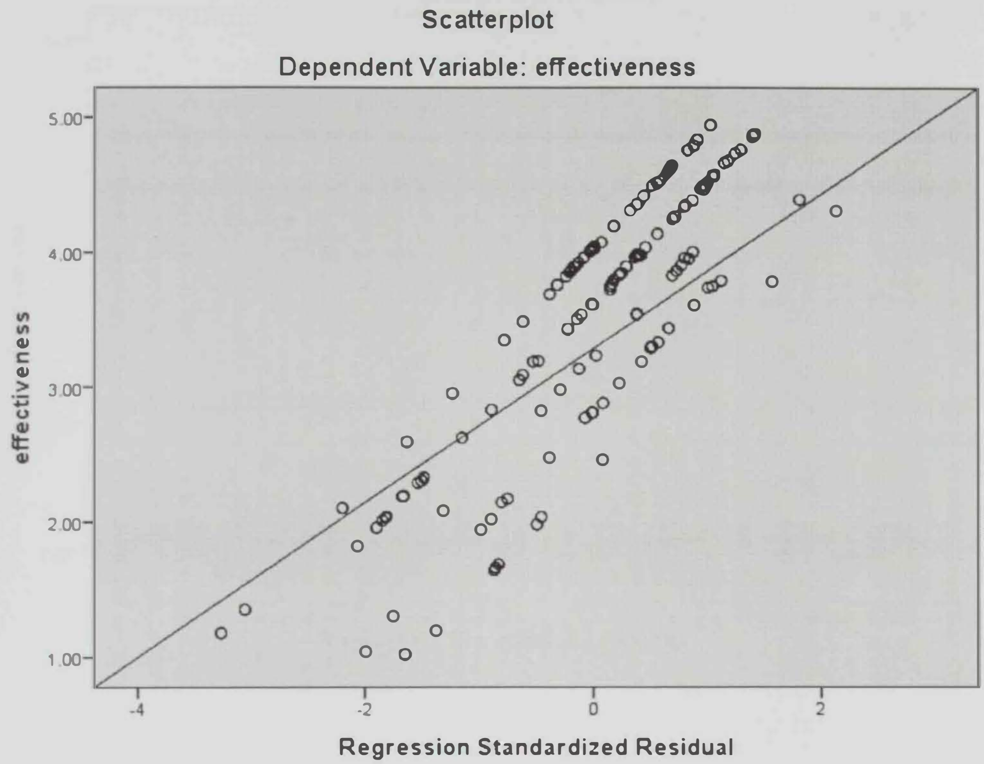
- Dependent variable : Supervision Process



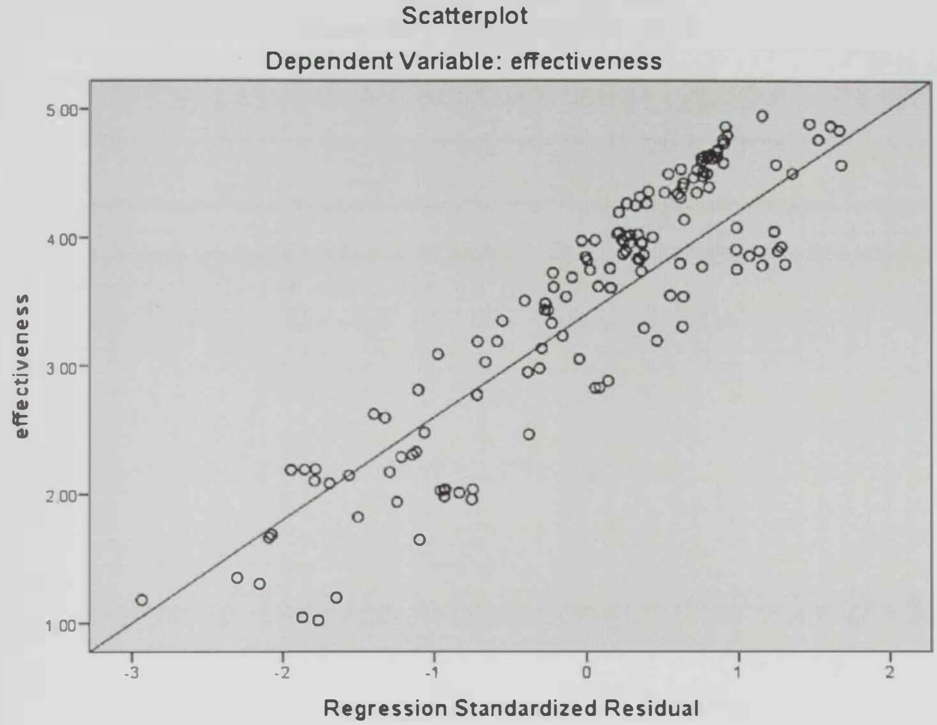
- Dependent variable: Perceived effectiveness of competency model and independent variable is competency model design



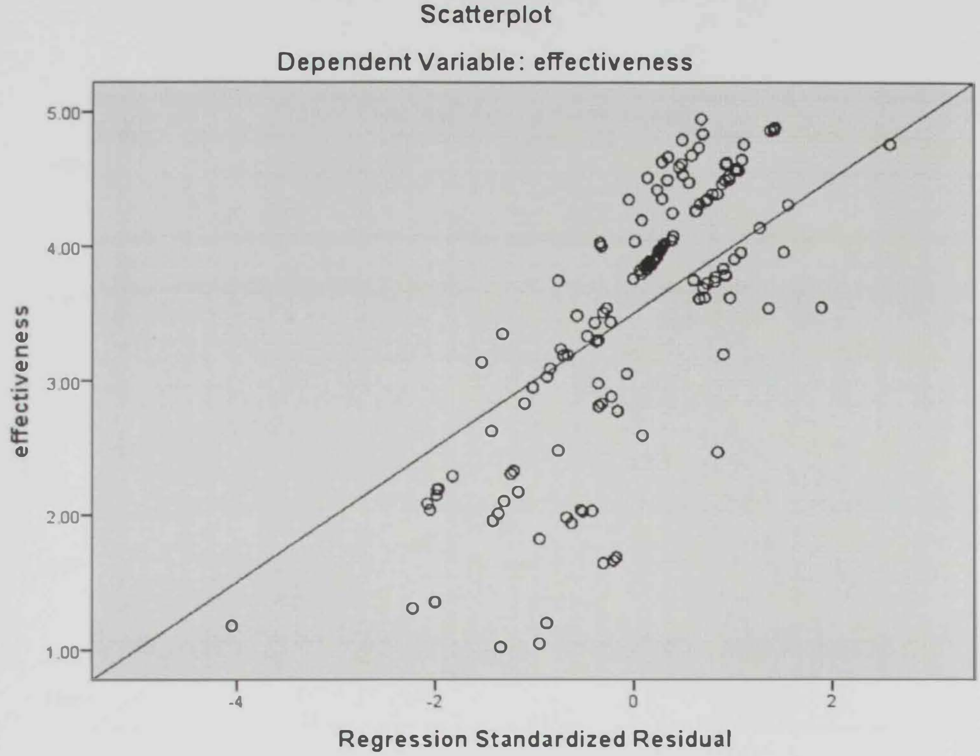
- Dependent variable: Perceived effectiveness of competency model and independent variable is advising process



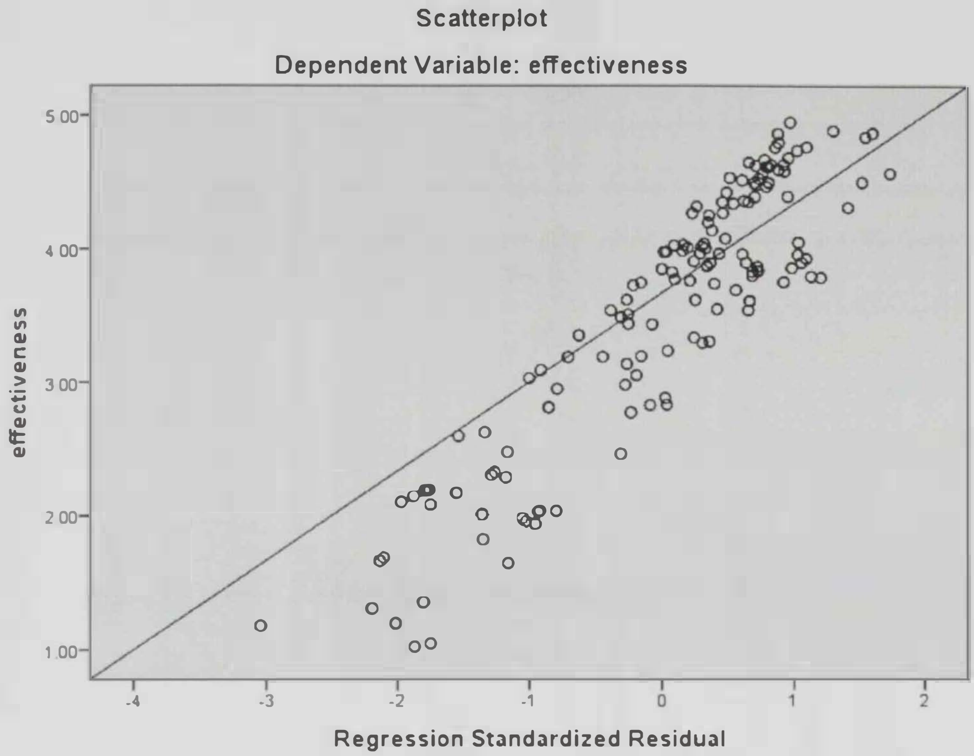
- Dependent variable: Perceived effectiveness of competency model and independent variable is coaching process



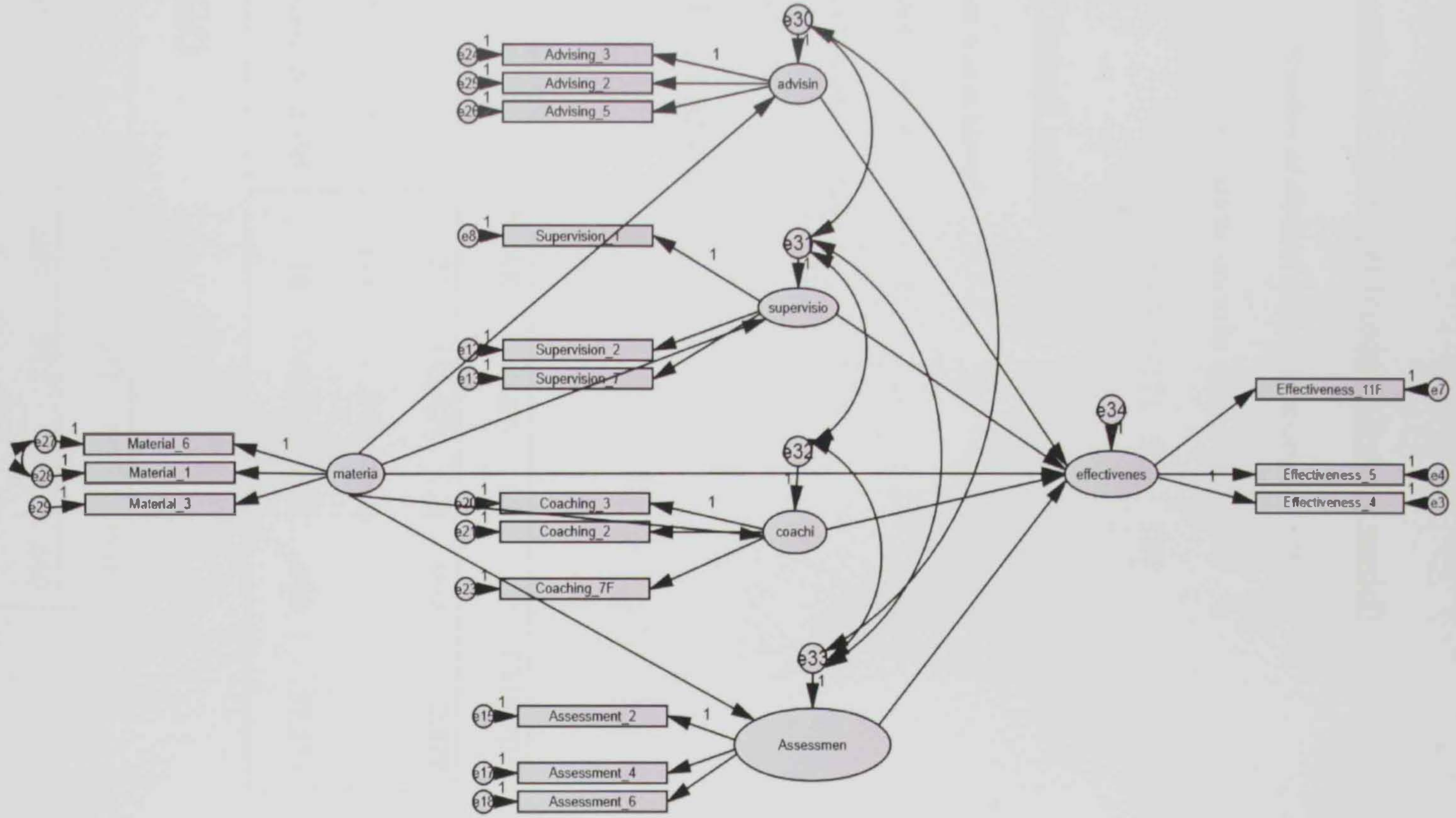
- Dependent variable: Perceived effectiveness of competency model and independent variable is assessment process



- Dependent variable: Perceived effectiveness of competency model and independent variable is supervision process



Appendix VII: Structural Model



Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 171

Number of distinct parameters to be estimated: 51

Degrees of freedom (171 - 51): 120

Result (Default model)

Minimum was achieved

Chi-square = 345.429

Degrees of freedom = 120

Probability level = .000

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	51	345.429	120	.000	2.879
Saturated model	171	.000	0		
Independence model	18	5748.895	153	.000	37.574

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.069	.912	.875	.640
Saturated model	.000	1.000		
Independence model	.644	.209	.116	.187

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.940	.923	.960	.949	.960
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.784	.737	.753
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	225.429	173.628	284.874
Saturated model	.000	.000	.000
Independence model	5595.895	5351.309	5846.816

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.924	.603	.464	.762
Saturated model	.000	.000	.000	.000
Independence model	15.371	14.962	14.308	15.633

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.071	.062	.080	.000

Model	RMSEA	LO 90	HI 90	PCLOSE
Independence model	.313	.306	.320	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	447.429	452.889	647.703	698.703
Saturated model	342.000	360.304	1013.504	1184.504
Independence model	5784.895	5786.822	5855.580	5873.580

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.196	1.058	1.355	1.211
Saturated model	.914	.914	.914	.963
Independence model	15.468	14.814	16.139	15.473

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	159	173
Independence model	12	13

Execution time summary

Minimization: .075

Miscellaneous: 1.821

Bootstrap: 1.992

Total: 3.888

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
advising	<---	material	.555	.055	10.025	***	par_23
Supervision	<---	material	.485	.060	8.053	***	par_24
Coaching	<---	material	.626	.064	9.764	***	par_25
Assessment	<---	material	.454	.043	10.501	***	par_26
effectiveness	<---	advising	-.074	.057	-1.293	.196	par_13
effectiveness	<---	supervisio	.070	.077	.906	.365	par_14
effectiveness	<---	coachig	-.170	.073	-2.310	.021	par_15
effectiveness	<---	Assessment	.364	.073	5.003	***	par_16
effectiveness	<---	material	.701	.075	9.401	***	par_17
Effectiveness_4	<---	effectiveness	1.000				
Effectiveness_5	<---	effectiveness	1.027	.040	25.956	***	par_1
Effectiveness_11F	<---	effectiveness	.920	.044	20.735	***	par_2
Supervision_1	<---	supervision	1.000				
Supervision_2	<---	supervision	1.021	.051	20.068	***	par_3
Supervision_7	<---	supervision	1.082	.051	21.380	***	par_4
Assessment_2	<---	Assessment	1.000				
Assessment_4	<---	Assessment	1.172	.043	27.390	***	par_5
Assessment_6	<---	Assessment	1.259	.043	29.478	***	par_6
Coaching_3	<---	coaching	1.000				
Coaching_2	<---	coaching	.893	.043	20.709	***	par_7
Coaching_7F	<---	coaching	.966	.046	20.863	***	par_8
Advising_3	<---	advising	1.000				

			Estimate	S.E.	C.R.	P	Label
Advising_2	<---	advising	.724	.053	13.642	***	par_9
Advising_5	<---	advising	1.250	.053	23.588	***	par_10
Material_6	<---	material	1.000				
Material_1	<---	material	.925	.058	16.054	***	par_11
Material_3	<---	material	1.023	.062	16.535	***	par_12

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
advising	<---	material	.578
supervision	<---	material	.467
coaching	<---	material	.552
Assessment	<---	material	.587
effectiveness	<---	advising	-.072
effectiveness	<---	supervision	.074
effectiveness	<---	coaching	-.196
effectiveness	<---	Assessment	.286
effectiveness	<---	material	.715
Effectiveness_4	<---	effectiveness	.893
Effectiveness_5	<---	effectiveness	.923
Effectiveness_11F	<---	effectiveness	.813
Supervision_1	<---	supervision	.849
Supervision_2	<---	supervision	.847
Supervision_7	<---	supervision	.886
Assessment_2	<---	Assessment	.872
Assessment_4	<---	Assessment	.931

			Estimate
Assessment_6	<---	Assessment	.967
Coaching_3	<---	coaching	.904
Coaching_2	<---	coaching	.823
Coaching_7F	<---	coaching	.827
Advising_3	<---	advising	.842
Advising_2	<---	advising	.622
Advising_5	<---	advising	.996
Material_6	<---	material	.816
Material_1	<---	material	.832
Material_3	<---	material	.823

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
e30	<-->	e33	.212	.034	6.323	***	par_18
e30	<-->	e31	.194	.038	5.097	***	par_19
e31	<-->	e32	.666	.071	9.426	***	par_20
e31	<-->	e33	.230	.039	5.959	***	par_21
e32	<-->	e33	.160	.037	4.353	***	par_22
e27	<-->	e28	-.112	.041	-2.733	.006	par_27

Correlations: (Group number 1 - Default model)

			Estimate
e30	<-->	e33	.401
e30	<-->	e31	.249
e31	<-->	e32	.712

	Estimate
e31 <--> e33	.372
e32 <--> e33	.252
e27 <--> e28	-.237

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
material	1.077	.121	8.913	***	par_28
e30	.661	.069	9.646	***	par_29
e31	.910	.094	9.708	***	par_30
e32	.960	.095	10.083	***	par_31
e33	.422	.042	10.092	***	par_32
e34	.372	.044	8.410	***	par_33
e3	.263	.029	8.960	***	par_34
e4	.191	.027	7.124	***	par_35
e7	.449	.039	11.504	***	par_36
e8	.451	.045	10.086	***	par_37
e12	.476	.047	10.131	***	par_38
e13	.372	.043	8.578	***	par_39
e15	.202	.017	11.708	***	par_40
e17	.136	.015	9.006	***	par_41
e18	.072	.014	5.152	***	par_42
e20	.308	.041	7.445	***	par_43
e21	.523	.049	10.708	***	par_44
e23	.596	.056	10.619	***	par_45
e24	.408	.040	10.289	***	par_46

	Estimate	S.E.	C.R.	P	Label
e25	.825	.062	13.306	***	par_47
e26	.013	.041	.315	.752	par_48
e27	.540	.061	8.845	***	par_49
e28	.410	.049	8.431	***	par_50
e29	.538	.054	9.979	***	par_51

	Estimate	S.E.	C.R.	P	Label
e25	.825	.062	13.306	***	par_47
e26	.013	.041	.315	.752	par_48
e27	.540	.061	8.845	***	par_49
e28	.410	.049	8.431	***	par_50
e29	.538	.054	9.979	***	par_51