The evaluation of training and development of employees: The case of a national oil and gas industry

A Thesis Submitted for the Degree of Doctor of Philosophy

By

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Abstract

Despite the fact that oil and gas companies invest heavily in training, there are considerable evidences to show that evaluation of the training is seldom undertaken, which leads to failure in determining the effectiveness of training. Kirkpatrick's four levels model (1959) sets out to be the key evaluation criteria to measure the effectiveness of training which has been used for more than 50 years to assess training effectiveness. This study focuses on the evaluation and improvement of Kirkpatrick's four levels model. It argues that Kirkpatrick's four levels model (1959) fails to account for factors such as work environment, individual factors, training characteristics, and their impact on training effectiveness. Accordingly, this study aims to investigate the moderating variables of training characteristics and evaluate their subsequent impacts on Kirkpatrick's four training outcomes (reaction, learning, behaviour and results) and on intention to transfer learning. The objective of this study is to identify those training variables (pre-training interventions and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and objectives) and their effect on improving employee performance. In this study, training characteristics are referred to as pre-training interventions and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and objectives. To achieve the aim of this study, quantitative research was adopted. The study was conducted at three separate times (pre-training, immediately after completion and post-training 2-3 months). The hypotheses were tested by selecting a sample of n1 = 406, n2 = 402, n3 = 391 trainees in health and safety training working in national oil and gas companies located in Oman by using convenience sampling. Structural equation model (AMOS) software is used to validate the research model.

The study has contributed to the field of training evaluation by developing Kirkpatrick's four levels model through an the examination of the impact of training characteristics on Kirkpatrick's four levels (reaction, learning, behaviour and results) and on intention to transfer learning in the national oil and gas industry in Oman before and after training was completed. The findings indicated that pre-training intervention and practices were positively and significantly related to expectations of training outcomes, and only trainee readiness was found to be positively and significantly related to the expectations of training environment and expectations of trainer performance and behaviour. The result confirmed the positive and significant correlation between reaction and learning, and between behaviour and results. Moreover, the results indicated that trainer performance and behaviour were positively and significantly related to the two training outcomes: reaction and learning; and in addition, training environment had a strong and positive impact on learning. Training content and objectives were positively and significantly related to behaviour.

Nevertheless, pre-training interventions and activities had an insignificant effect on expectations for the training outcomes. Further, trainee readiness had an insignificant effect on expectations for the training environment and on expectations of trainer performance and behaviour. Learning had an insignificant effect on intention to transfer learning. The training environment and training methods were not found to be positively and significantly related to reaction. Training methods were not found to be positively and significantly related to learning. Further, the training characteristics, such as the training environment, training methods and trainer performance and behaviour had an insignificant impact on intention to transfer learning. The findings did not support that training characteristics had a moderating role on the relationship between training outcomes.

This research has empirically investigated the moderating effects of training characteristics on the relationship between reaction, learning, intention to transfer learning, behaviour and results. This study has contributed to the literature empirically by showing that pre-training interventions and activities were the strongest factor contributing to expectations of the training environment, as well as to expectations of trainer performance and behaviour. Trainee readiness was the strongest factor contributing to expectations of the training outcomes. Furthermore, this study has contributed to the extant literature empirically by showing that trainee reaction is related significantly to trainee learning. This study has contributed to the literature by showing that trainer performance and behaviour was the strongest factor contributing to reaction. Furthermore, the training environment (followed by trainer performance and behaviour) was the strongest factor supporting learning. This study has further contributed to the extant literature empirically by showing that behavioural change is related significantly to results. This study also shows that training objectives (followed by training content) was the strongest factor affecting behaviour. From a practical perspective, the findings of this research have significant and practical implications for instructors, training designers, managers and supervisors when creating effective training programmes. In addition, this study contributes a framework for the practice of evaluating training effectiveness.

Dedication

To my lovely mother Saleema and my appreciated sister, Fatima whom I sadly lost them during my PhD study. Without their encouragement and support I would not have been able to achieve this dream. May Allah rest their soul in heaven.

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Declarations

I declare that to the best of my knowledge, no portion of the work referred to in this thesis has been submitted previously for any degree award to any other university or institute of learning. The following publications have been produced as direct or indirect results of the research study discussed in this thesis.

Journal articles

Al-Mughairi, A. M. (2015). The evaluation of training and development of employees: the case of a national oil and gas industry, *Organisational Studies and Innovation Review*, (1) 2, pp. 1-16.

Conference papers

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Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

1.0 Introduction

Successful organisations recognise the need for a competent and developed workforce to achieve their objectives. Further, organisations know that training and development allow them to compete, innovate, produce, serve and achieve goals (Salas et al., 2012). Training is provided to improve the skills, knowledge and attitudes of an organisation's employees (Salas et al., 2008). Thus, they invest heavily in training and development (Kazbour and Kazbour, 2013). In 2013, global expenditure for training was approximately $306.9 billion: 46% of this was spent in North America, 29% in Europe, 10% in Asia, 7% in India, 3% in Australia, 1% in Africa, and the remaining 1.1% was spent in the rest of the world (Harward, 2014). In 2015, organisations in the United States spent approximately $1,252 per employee on training and development (The Association for Talent Development, 2016).

With the high level of organisational investment in staff training (Salas et al., 2008), training evaluation has emerged as the key measure of its organisational contribution. Training and development is defined as "the process of systematically developing work-related knowledge and expertise in people for the purpose of improving performance" (Swanson and Holton, 2009, p.226). Performance is defined according to Cascio (1992) as "an employee's accomplishment of assigned tasks" (Yamoah and Maiyo, 2013, p.3). Training evaluation refers to a systematic process of forming value judgments about the quality of training to make effective training decisions regarding selection, adoption, value, and modification in the training programme activities (Goldstein and Ford, 2002). However, training evaluation to determine training effectiveness (Collis, 2002; Griffin, 2010; Al-Athari and Zairi), is seldom undertaken. Kirkpatrick's (1959) model has been widely used for more than 50 years to measure training effectiveness (Homklin et al., 2013, Saks and Burke, 2012). This model is a widely accepted approach in the field of training and development, and by training specialists to evaluate training programmes (Alliger and Janak, 1989; Bassi and Cheney, 1997; Bates, 2004; Holton, 1996; Newstrom, 1978). Kirkpatrick's (1959) model identifies four levels—reaction, learning, behaviour and results. Level 1 (reaction) measures trainees' satisfaction, level 2 (learning) measures the acquisition of knowledge and skills, level 3 (behaviour) measures the transfer of learning to the workplace and, finally, level 4 (results) assesses the overall impact of training in the organisation (Kirkpatrick and Kirkpatrick, 2006). This model has been criticised for failing to account for such factors as work environment, individual factors and the design and delivery of training, and does not describe and evaluate the impact of these factors on training effectiveness (Aluko and Shonubi, 2014; Bates, 2007; Homklin et al., 2013). Training design and delivery factors are termed in this study as training characteristics (i.e., training environment, training methods, trainer performance and behaviour, training content and training objectives as suggested by Iqbal et al., (2011). This chapter gives a brief overall description of the area of research and the theoretical framework of the study. It addresses such issues as research background, aims and objectives of the research, research questions, and rationale of the research, its justification, context in Oman, research methodology and contributions. Additionally, it outlines the structure of the thesis.

1.1 Background and motivation of the research

Business organisations face challenges due to globalisation such as rapid modernisation and competition for qualified employees (Cole, 1998, Gatignon and Kimberly, 2004). In this context, there is an ever-increasing emphasis placed on employee training and development. Training and development refers to "the process of systematically developing work-related knowledge and expertise in people for the purpose of improving performance" (Swanson and Holton, 2009, p. 226). Training improves individual and organisational performance by developing the competence and skill levels of employees. An organisation is defined as "a set of meanings that are pertinent and relevant to attaining specific goals at a given time and in a given place" (Fernández-Ríos et al., 2004, p. 224). Traditionally, organisations have invested heavily in training and development in order to improve their employees' performance (Ameeq and Hanif, 2013). The emphasis inherent in this situation implies a requirement for training evaluation to determine the effectiveness of the training itself (Collis, 2002). Training evaluation refers to "the process of collecting descriptive and subjective information essential for making effective training decisions regarding selection, adoption, value, and modification in the training activities" (Goldstein and Ford, 2002, p. 138). The evaluation of training itself should play a critical role in measuring training outcomes, but this aspect is commonly ignored or, at best, marginalized (Giangreco et al., 2009). Martin (2010) notes that, in fact, there is seldom any organisational action taken in the assessment of training needs, the setting of specific objectives or evaluating the impact of training only beyond the reaction level. The reaction level represents the first level of the Kirkpatrick four levels training evaluation model (see subsection 1.2.3).

Barriers to training evaluation have been identified (Athari and Zairi, 2002; Bedingham, 1997; Hung, 2010; Griffin, 2010; Gutek, 1988). A number of training evaluation challenges have arisen, as less consideration is given to follow-up and evaluation of training outcomes. This is because of lack of material and resources used to evaluate training, the lack of expertise in training evaluation, less interest from top management, and costly, time consuming and insufficient evaluation systems. Knowledge of the facilitators of and the barriers to training evaluation could help to substantially improve training effectiveness. Simmonds and Gibson (2008) argue that training evaluation, if it is properly conducted, can improve programme effectiveness. Therefore, knowledge of all the factors that facilitate or inhibit training outcomes helps to improve training effectiveness (Kennedy et al., 2014) and generate optimal organisational outcomes.

Many varieties of training evaluation models have been developed over the past years (Passmore and Velez, 2012). The purpose Training evaluation models is to help find the dimensions or factors to be considered in evaluating training effectiveness (Tzeng et al., 2007). In general, training evaluation models can be grouped into two major categories: goal-based approaches such as Kirkpatrick's four levels model used in this research and Kaufman's five levels of evaluation, and system-based approaches, such as the context, input, process, product (CIPP) model, the input-process-output (IPO) model, and the training validation system (TVS) (Philips, 1991). Both, goal-based and system-based models have dominated in the training and development literature in recent years (Dahiya and Jha, 2011). This doctoral study investigates the impact of training characteristics on the levels for Kirkpatrick's model: reaction, learning, behaviour and results.

The Kirkpatrick model (1959) has been widely used to measure training effectiveness for over 50 years. As indicated in Figure 1.1, Kirkpatrick's model sets out what are considered to be the key evaluation criteria to measure the effectiveness and/or efficiency of training programmes, in such a way that weaknesses can be identified and future programmes improved (Saks and Burke, 2012). Kirkpatrick's model has been criticized for providing a reductive view of training effectiveness that oversimplifies the complex process of training evaluation (Bates, 2007; Guerci et al., 2010). It is further criticized for failing to account for the effect of the individual or the organisation. It fails to account to the impact of training characteristics on training effectiveness (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013). Therefore, further empirical research is needed to provide a better understanding of the impact of training characteristics on training effectiveness. Consequently, this research seeks to examine the moderating variables of training characteristics, as well as their subsequent impacts on training outcomes: reaction, learning, intention to transfer learning, behaviour and results. Yet, it can be argued also, that this model is the most widely accepted by academics (Phillips, 1996) and is commonly used by organisations (Bates, 2004), despite its criticisms (e.g., see Bates, 2001; Holton, 1996; Hung, 2010). The following sub section discusses the Kirkpatrick model in detail.

1.1.1 The Kirkpatrick four levels model

Level I: Reaction

Learners' satisfaction with training activities

Level II: Learning

Skills and knowledge gained as a result of the activity

Level III: Behaviour

The effect of training on the performance of the learners in the workplace

Level IV: Results

The effect of training on changes in performance and measurable results at work (e.g., production or service figures, costs, etc.)

Figure 1.1 Kirkpatrick's four levels training evaluation model

Source: (Adapted from Devins and Smith, 2013, p. 188).

In 1959, an original idea of Kirkpatrick's model and its related methodology were developed, and since then, it has become well established within the training and development profession (Homklin et al., 2013; Saks and Burke, 2012). Kirkpatrick proposed (1959, 1976; 1994, 1996, 1998) four levels for this model: reaction, learning, behaviour and results. At the first level, reaction means the measured feelings and attitudes of the participants. At the second level; learning is the degree to which learners acquire knowledge and skills. At the third level, behaviour means the extent of training knowledge acquired by participants that is transferred back to their work environment upon their return to work. At the fourth level, results is the measure of the impact of that training on the organisation. There are discrepancies in terms of the amount of published research across these four levels, with further research required at the first reactions level, where little research exists. Arthur et al., (2003a) note that past research has indeed used reaction criteria when evaluating training effectiveness, yet this represented only 15 (4%) data points compared to the 234 (59%) for learning, 122 (31%) for behaviour, and 26 (7%) for results within their meta-analysis of observed training effectiveness.

The Kirkpatrick four levels model has been criticized for its incompleteness, the assumption of causality and the assumption of the increasing importance of information as the levels of the outcomes ascend (Bates, 2004). First, the model does not take into account the influence of the individual and context in training effectiveness (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013). The effectiveness of training is impacted by organisations and individuals, as well as by training design and delivery factors before, during and after training (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001). It is assumed that when employing the Kirkpatrick model it is not necessary to explore these factors when evaluating the effectiveness of training (Bates, 2004). Second, Kirkpatrick (1994) suggests that there was a linear causality relationship between the four levels. Research has largely failed to support this assumption (Bates, 2004). Meta-analyses by Alliger et al., (1997) and Alliger and Janak (1989) have shown that few studies support the assumption of causality between the four levels. Third, according to Alliger and Janak (1989), the model assumed that each of the subsequent levels evaluated provided more useful information about the training programme than the previous level evaluated. Nevertheless, research and empirical results do not provide enough evidence to support the assumption that each of the succeeding levels gives more useful data than the one preceding it (Bates, 2004).

Based on criticisms of the Kirkpatrick model, other models have been developed (e.g. Brinkerhoff, 1987, 2003; Bushnell, 1990, Hamblin, 1974; Holton, 1996; Kaufman et al., 1996; Kraiger et al., 1993; Phillips,1996; Stufflebeam,1983; Warr et al.,1970). However, most models which either directly or indirectly build on Kirkpatrick's four-level model face similar challenges and require further development as will be discussed later in literature.

One area this research will concentrate on is the effect of training characteristics on training effectiveness. Previous training evaluation research involving training characteristics has examined each of the four levels: reaction, learning, behaviour and results, either individually or in terms of the relationship between two discrete levels. Referred to training characteristics as the training content, goals of training, methods, training place and trainer, which can influence trainees' learning level to a training programme (Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Kirkpatrick and Kirkpatrick, 2006; Nikandrouet et al., 2009; Diamantidis and Chatzoglou, 2012). All of these factors have an influence on trainees' reaction (Jeng and Hsu, 2002). Similarly, Baldwin and Ford (1988) identified the impact of training characteristics on the transfer of learning. This study aims to investigate in-depth the moderating impact of training characteristics on the relationship among Kirkpatrick's four levels of training. It also examines in detail the effect of training characteristics on training effectiveness.

Previous studies have investigated the meditating effects of training characteristics on the relationships between reaction, learning, behaviour and results (e.g. Iqbal et al., 2011). Therefore, an investigation into the moderating effects of training characteristics is necessary (Homkiln et al., 2013). Moderating effects are referred to as interaction effects where introducing a moderating variable changes the direction or magnitude of the relationship between an independent variable and its corresponding dependent variable (Awang, 2012; Little et al., 2007).

1.2 Research Problem

Most of the research on training evaluation has relied on Kirkpatrick's four-level model to explain the effectiveness of training (Tracey et al, 2001). However, the Kirkpatrick model is criticised for failing to take into account the influence of the individual and context in training effectiveness (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013). The effectiveness of training is known to be affected by organisations and individuals, as well as by training characteristics, before, during, and after training (Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Tannenbaum and Yukl, 1992). Nevertheless, in employing the Kirkpatrick model, it has been assumed that it is not necessary to explore these factors when evaluating the effectiveness of training (Bates, 2004). The following subsection discuss a critique of Kirkpatrick's four levels, and evaluation and improvement of Kirkpatrick's model

1.2.1 Factors influencing training effectiveness

Most research focuses on the analysis of individual and work environment factors that influence training effectiveness (Homklin et al., 2013). Further studies need to explore the multidimensional factors including training design, as they influence the transfer of the training (Homklin et al., 2014). Baldwin et al. (2009) suggested there is a need for further research on the influence of training design factors in training effectiveness. Several factors play a significant role in the observed effectiveness of organisational training (Arthur et al., 2003a). The training design and delivery (training characteristics) factors and individual characteristics are the most factors that affect training effectiveness (Clark et al., 1993; Kontoghiorghes, 2001). In this research training design and delivery factors is termed as training characteristics. Training characteristics are referred to as training environment, training methods, trainer performance and behaviour, training content and training objectives (Kirkpatrick and Kirkpatrick, 2006; Iqbal et al., 2011). Further, Arthur et al., (2003a) suggested such factors as the skills of the trainer or trainer performance and the quality of the training content to be included in the development of future comprehensive models and in the evaluation of training effectiveness.

1.2.2 Evaluating training effectiveness

Alvarez et al., (2004) describes training effectiveness as the study of the individual, training and organisational characteristics that affect the training process before, during and after training. Previous research on training evaluations has focused mainly on evaluating training outcomes at the end of training (post-test only) (Pineda, 2010; Warr et al., 1999). However, measuring training outcomes pre-test and post-test, rather than post-test only have been suggested (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). Other studies have investigated post-training evaluations, focused on the influence of training characteristics, looking at the four levels (reaction, learning, behaviour and results) either individually or in terms of the relationship between two discrete levels (Baldwin and Ford, 1988; Bates et al., 2007; Ghosh et al., 2011; Iqbal et al., 2011). They however, have devoted less attention to the influence of training characteristics on training effectiveness (Bates, 2004). Therefore, training cannot be appropriately measured in isolation from these surrounding factors (Tannenbaum et al., 1993).

1.2.3 Evaluation at the reaction level

Although it has been proposed that more research be done to study how to conduct training evaluation successfully, few empirical studies examining this have been conducted. Most organisations conduct training evaluation at the reaction level which is the first level of the Kirkpatrick model (Plant and Ryan, 1992; Arthur et al., 2003a; Oostrom and van Mierlo, 2008; Saks and Burke, 2012), but few empirical researchers have investigated training evaluation at the reaction level (Alliger and Janak, 1989; Arthur et al., 2003a). The reaction level in the Kirkpatrick model measures the satisfaction of participants with the training programme. In their meta-analysis, Powell and Yalcin (2010) add that the reaction level is important but that it is the least examined level in current studies.

1.2.4 Transfer of learning

Most recent studies mention the transfer of learning as one of the main obstacles facing organisations. Studies show that only 10–40% of the learned skills and knowledge are transferred back to the work place (e.g. Bhatti et al., 2014), with trainees often not transferring learned skills and knowledge to their work environment. Salas and Cannon-Bowers (2001) emphasised the need to investigate more factors influencing the transfer of the newly-acquired knowledge and skills.

1.3 Practical problem

Following the discussion on several practical problems surrounding the evaluation of training programmes are described.

1.3.1 Insufficient and incomplete training evaluation

While organisations invest heavily in training because of the importance of training and development, training evaluation has been viewed as insufficient and incomplete (Armstrong, 2013; Pineda-Herrero et al., 2011; Saks and Belcourt, 2006; Salas et al., 2012; Velada et al., 2007; Yadapadithaya, 2001). The evaluation of the four Kirkpatrick training outcomes should be ongoing from the initiation of any training programme. Also, further research is needed on the full use of the four levels of the Kirkpatrick model (Alliger and Janak, 1989; Bassi et al., 1996; Bomberger, 2003; Bramley and Kitson, 1994; Plant and Ryan, 1992). It remains questionable in human resource development (HRD) whether or not adhering to the four levels actually makes the training successful. Human resource development is defined as "the integrated use of training and development, career development and organisational development to improve individual and organisational effectiveness" (Hamlin and Stewart, 2011, p. 206).

1.3.2 The common evaluation at the reaction level

In practice, trainee reaction is the common criterion used by organisations to measure and evaluate the effectiveness of training. A discrepancy exists in terms of the frequencies of use in practice across these four levels with more use of trainee reaction due to measurement of trainee reaction is easily to obtain. Supporting this, in the U.S., 88% out 199 of participants reported that their organisations used Level 1 evaluations, 83% used Level 2 evaluations, 60% used Level 3 evaluations and 35% used Level 4 evaluations (Association for Training and Development, in Ho, 2016). In Canada, Saks and Burke (2012) found that organisations are most likely to evaluate the reaction outcome and least likely to evaluate behaviour and results, as shown by previous studies. In Arab counties, Attiya (1993) and Al-Athari and Zairi (2002) found that the most widely measured level of training effectiveness is reaction. Also, Salas and Cannon-Bowers (2001) demonstrated in their review that there was a lack of research in organisational training practices. The training evaluation phase is critical for determining training effectiveness, yet this stage remains more theoretical than practical (Attiya, 1993; Hung, 2010).

1.3.3 Obstacles to training evaluation

In the training cycle, training evaluation is viewed as the final process (Pershing and Pershing, 2001; Hung, 2010), but it is an essential step in measuring the effectiveness of the training intervention. Evaluating the effectiveness of training is defined as the determination of the level of acquired practical skills and any changes in behaviour because of the training (Borate et al., 2014). In practice, there are few organisations which evaluate training because it is costly, there is little management cooperation and unqualified people conduct the evaluations (Vidal-Salazar et al., 2012). Management believes that training automatically makes employees more capable of performing their duties, so managers see no need to evaluate it at all (Hashim, 2001). They see training evaluation as an unnecessary use of resources and time.

Despite the importance of training, methods used to conduct evaluations are inappropriate. Training designs and methods of delivery are not appropriate or inadequate assessment tools to measure training evaluation have been suggested (Abdalla and Al-Homoud, 1995; Abdalla et al., 1998; Al-Athari and Zairi, 2002; Al-Fathaly and Chakerian, 1983; Al-Tayeb, 1986; Atiyyah, 1991; Bahar et al., 1996; Hung, 2010). Training evaluation is neglected for several reasons and even organisations that evaluate training fail to do so effectively.

1.4 Rationale of the study for Oman

The historic idea that investment in human resources is a liability rather than an asset is an idea that still dominates and controls how resources are allocated (Thorne and Mackey, 2007). As Harry (2007) confirms, within the Gulf Cooperation Council (GCC), human resources are still perceived as 'costs' to the employer, not valuable capital assets to be invested in. He cites Ruhs and Godfrey (2002) who stated that within the GCC, three decades of high revenues derived from oil resources have led to some negative effects such as a steady decrease in labour productivity due to the creation of mostly low paid, low benefit jobs. These jobs lead to the hiring of unskilled employees with little technical support rather than the employment of fewer labourers supported by higher wages, better benefits and improved technology. Hence, Omani organisations need a human resource development (HRD) and training framework to enhance their flexibility, creativity, team learning and collaboration among their workers (Rajasekar and Khan, 2013).

More empirical studies are needed on specific training evaluations in the oil and gas industry because training evaluations in the public sector in oil-producing countries face difficulties. In the Omani context, more empirical studies that examine human resource-related issues are needed (Al-Hamadi et al., 2007). There is a great need for more research studies examining human resources -related issues in important oil and gas regions, such as Oman, to improve theory and practice development (Budhwar and Debrah, 2001; Al-Hamadi et al., 2007), including progress on economic growth. Oman is considered a major oil and gas producer; it has continued to extend its research in training and development.

Human resource development is one aspect of the practice of human resource management. Therefore, the best way to understand human resources in a specific context is to investigate the factors influencing those human resources (Al-Hamadi et al., 2007). Few studies have been done on training evaluation in the context of Oman, and little research has been done specifically into the factors that influence training effectiveness. This thesis evaluates the impact of training characteristics on training effectiveness in the context of the Omani national oil and gas sector.

1.4.1 Training evaluation in Arab countries

The literature on training and training evaluation shows that most Arab countries including the Gulf countries have difficulty with the evaluation of training. For example, there is a lack of management support for human resource practices in Arab countries (Al-Sayyed, 2014). Arab countries are referred to primarily on a geographical basis, as members of the Arab league: Algeria, Bahrain, Djibouti, Comoros, Egypt, Eritrea, Iraq, Jordan, Kuwait, Lebanon Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, the Palestine territory (Gaza strip and West Bank), Tunisia, United Arab Emirates, and Yemen (Benamer and Donald, 2009). Abdalla and Al-Homoud (1995) state that there is a lack of systematic follow-up evaluation to measure the effectiveness of training programmes. In the Gulf countries, Al-Athari and Zairi (2002), when studying Kuwaiti organisations, found that they measure the effectiveness of training programmes by determining the satisfaction of participants instead of determining if changes in behaviour, transfer of learning, and assessment of acquired learning from the training programme actually took place, and that there was, in some cases, even a lack of emphasis as to the need to assess the organisational results of training. Also, Arab organisations focus on evaluating the reaction level by distributing a questionnaire or smile sheets to the participants, and their performance appraisal tools are not systematically applied (Attiya, 1993; Al-Athari and Zairi, 2002).

1.5 Omani context

Since the present Sultan Qaboos became the new leader of Oman in 1970, Oman has gone through a radical change with swift and notable developments in various aspects of people's lives. In particular, education became a high priority in Oman (Skeet, 1992; The Ministry of Information, Sultanate of Oman, 2016). Oman is the third largest Arab country in land area with a population of 4,550,538 million (Sultanate of Oman, Ministry of Information, 2017). Its unique geographical and political positions make it attractive to many international companies (Al-Hamadi et al., 2007) including oil, gas and minerals, creating a unique economy.

While the country continues to experience declining oil revenues, the Omani government is committed to improving the skills of the population and investing in youth. Therefore, education authorities are moving forward with reforms focused on improving quality and strategic learning objectives to meet the demands of the labour market (Oxford Business School, 2017).

Human resources continue to progress in Oman due to higher levels of education, the encouragement of the participation of women in the labour market, and the increase in the number of workers who participate in the economy.

Oman shows its commitment to developing human resources proposed three proposed plans: a five - year plan training programme, the Omanisation plan and Vision 2020. Human resources development has been prioritised throughout the Sultanate of Oman's successive Five-Year Development Plan (Al-Lamki, 2000). Omanisation is meant to enhance the training and development of citizens by aiming to increase the number of qualified local people who can work in the public and private sectors. Therefore, some efforts have been made to apply the Omanisation strategy to the public and private sector by giving opportunities to Omani citizens that would otherwise go to foreign workers without negatively affecting job or organisational performance. Despite achieving good results within the public sector (Valeri, 2005); the private sector faces some challenges. Finally, the Omani government outlined its commitment to development programmes in a document called Vision 2020 (Al-Lamki, 2000; Budhwar et al., 2002; Al-Hamadi et al., 2007; Rajasekar and Khan, 2013), which considers the need for employee development and effective management of talent.

Furthermore, accessibility and convenience are grounds which guide researchers in their selection of the case study of their research (Silverman, 2013). The Omani context provides the convenience for this study as its case study is the national oil and gas companies which account for large amount of the world's oil and gas reserves that are mostly located in Gulf Cooperation Council (GCC) countries, including Oman. The Gulf Cooperation Council (GCC) includes six members: Bahrain, Kuwait, Oman, Saudi Arabia, Qatar and United Arab Emirates (Abdmouleh et al., 2015; Beidas-Strom et al, 2011; Fayyad and Daly, 2011; Vohra, 2017). In addition, the researcher's accessibility to management levels in the selected companies in the Omani context makes it a simple matter to gather data for this research in order to achieve the aim and objectives of this study and to get a full understanding of the impact of training characteristics on training effectiveness. Hence, Omani content is the appropriate context for this study.

1.5.1 Rationale of choosing oil and gas

Oil and gas are major sources of energy for all countries, as well as a source of profit for oil-producing countries and multinational corporations (Ghettas, 2015). According to Blanchard (2009), the oil and gas industry is a critical revenue generator that adds to economic performance. Khdair et al., (2010) suggest countries can earn large amounts of foreign capital by selling oil and gas, which supports construction and infrastructure projects in the country. According to Elattari (2011), oil has supported the Omani economy and improved living standards since 1970. It continues to stimulate the construction of modern and expansive infrastructure, such as electrical utilities, telephone services, roads, public education and medical services (Elattari, 2011). Omani oil and gas companies were selected as the context for the current study because they have made rapid improvements in terms of training and development in recent years and play an important role in the development of Oman.

Today's oil and gas industry faces many challenges, such as global competition for depleting resources, the falling price of oil, occupational accidents and a shortage of skilled employees. The oil and gas industry is characterised by two key factors that necessitate the need for employee training and the accurate assessment of employee training outcomes: competition for skilled staff and the avoidance of accidents. The inherently difficult working conditions of the oil and gas sector make it susceptible to high levels of injury and occupational accidents (Kane, 2010; Khdair et al., 2010). The Omani sector is no different (Al-Rubaee and Al-Maniri, 2011). In such high-risk working environments characterised by intense competition for skilled employees, employee training and development to improve skills and knowledge is a key differentiator among companies.

Furthermore, there is a high demand for skilled and experienced employees in these sectors (Harun et al., 2014) because they are critical to the company's growth and overall stability. Khan (2010) argues that Omani companies depend mostly on foreign workers for their higher competencies and skills, and only hire Omani citizens when they are pressured by the government to do so. According to Khan (2010), Omani citizens occupy human resource management positions in the oil and gas industry but they are not competent. Omani oil and gas companies have changed their structures, systems and processes which take care of their customers in providing better products and services in order to achieve competitive advantage and, provide good products and services for customers. Nevertheless, with shortages of labour in the oil and gas industry (Chandler, 2014), it appears that management needs to determine how to retain top-performing employees (Al-Harthy, 2007).

The Omani oil and gas industry provides training programmes to its employees at different levels (Al-Harthy, 2007), and Oman has invested heavily in training and development. On the other hand, Rajasekar and Khan (2013) indicate that in Oman, the most significant and challenging element in the training cycle in the public sector is the evaluation process, which requires more follow-ups. Furthermore, Al-Harthy (2007) investigates the usefulness of training programmes in the oil and gas industry and finds that the assessment of employee performance is unfair, feedback from managers is given slowly and infrequently, feedback is not useful and performance reviews (360-degree feedback) are not used to judge employees' performance. Moreover, Khan et al., (2015) in their evaluation of the career development plan at Oman Natural Gas (ONG) found that most employees consider the current electronic training evaluation system to be ineffective because it does not provide enough space for them to express their views freely (open-ended questions) and their perceptions are also not well received, nor are they given much importance by their managers.

In order to retain good employees and promote quality performance by all employees, many organisations have strategized to increase their training budgets to accomplish this (Bhatia and Kaur, 2014). On the other hand, even though oil and gas companies provide training and development for their workforce, the oil and gas industry still experiences a high rate of employee turnover. Employees leave oil and gas organisations for their competitors (Al-Harthy, 2007). The oil and gas industry faces challenges from this high turnover rate (Al-Harthy, 2007; Al-Emadi and Marquardt, 2007) due to low employee commitment, job dissatisfaction and lack of motivation.

Moreover, lack of management support for employees' performance prevents training effectiveness in oil companies because of a limited view of the importance of employee motivation, which, in turn, leads to qualified employees seeking employment with other oil and gas organisations, i.e. their competitors (Al-Harthy, 2007; Awan and Anjam, 2014). Management support and motivation is essential in the retention of employees and in the efforts to encourage them to remain with their organisation. With a shortage of unskilled labour in the oil and gas industry (Al-Harthy, 2007; Chandler, 2014), Al-Harthy (2007) suggests that management needs to determine how to retain their top-performing employees.

The oil and gas industry also faces the challenge of occupational accidents (Khdair et al., 2010). An occupational accident refers to an incident that occurs in the course of work that causes a non-fatal or fatal injury (International Labor Organisation [ILO] Code of Practice, 1996). Kane (2010) showed that the oil and gas industry is characterised by extremely high risk factors and that the rate of fatalities and injuries is very high in this industry. Hazards in the workplace exist because of ignorance, lack of training supervision, inadequately implemented rules and human error, all of which lead to negligence, carelessness, recklessness by workers and a lack of monitoring and control of work-related duties (Khdair et al., 2010).

With the inherently difficult working conditions of the industry, it is characterised by high levels of injury and occupational accidents (Kane, 2010; Khdair et al., 2010). The oil and gas industry is operating in increasingly remote geographical locations and harsher environmental conditions, with unconventional processes to extract hydrocarbons (Bigliani, 2013). Working conditions in the oil and gas industry are potentially hazardous and dangerous due to e.g. confined spaces, contaminated environments, constant noise, and exploration activities, extracting and drilling, using hazardous machines and equipment for drilling activities, the need for some workers to work on elevated platforms, highly flammable chemicals and gas from the work environment, and dealing with hazardous chemicals (Bresić et al., 2007; Niven and McLeod, 2009). The oil and gas industry in Oman has a high rate of occupational accidents among employees including non-Omani as well as Omani employees, due to poor work environments and the poor implementation of accident prevention strategies (Al-Rubaee and Al-Maniri, 2011). In their research, Al-Rubaee and Al-Maniri (2011) found that the majority of the injured employees (n=133, 78.2%) were Indians, non-Indian expatriates were 25 (14.7 %) and only 12 (7.1%) of the injured were Omanis. From 2013 to 2015, the rate of occupational accidents in the oil and gas sector was 33.2 % (Muscat Daily, 2016). This phenomenon is not exclusive to the Omani oil and gas industry, but is a worldwide phenomenon in the industry. In 2014, according to data from the Census of Fatal Occupational Injuries (CFOI) in the United States, fatal work injuries in the oil and gas extraction sector were at 17%, rising to 181 U.S workers from 155 in 2013 (U.S. Bureau of Labor Statistics, 2015). Thus, preventing work-related accidents is one of the mandates of the national oil companies. If this is not done, it will prevent the organisations from benefiting from economic progress and infrastructure expansion.

1.5.2 The importance of the oil and gas industry in GCC region

Most of Gulf Cooperation Council (GCC) countries are well known for the production of oil and oil related products, such as petroleum gas, and they are widely recognised as the largest oil producing countries (Reiche, 2010). Oil and gas make some of them rich because they reserve huge amounts of oil and gas. GCC countries are all rich in oil and gas reserves and possess 30 % of the world's total crude oil reserves and 21% of the world's natural gas (Hussain, 2015; Vohra, 2017). In addition, in 2012, they exported about 25% of the world's oil (Mondal et al., 2014). Oil exports are primarily determinants of earnings, government revenues, expenditures, and aggregate consumption demand (Arour and Rault. 2011; Aregbeyen and Kolawole, 2015).

The overall income per capita in many Gulf countries is largely a reflection of the oil industry and its related products, and this industry guards the social and economic wellbeing of these nations. It is their main source of income and a major element of their economic growth (Abdmouleh et al., 2015; AlQudah et al., 2016). Stevens (2008) argued that the oil sector is central to economic development in those oil and gas countries that depend on oil. Up to 85 % of GCC countries central government revenues are generated from exporting oil (El-Katiri, 2016). This industry provides opportunities for rapid economic development.

1.5.3 Rationale for choosing national oil and gas companies

Petroleum is the main source of income for about 90 countries worldwide; daily trade from this resource approaches $ 2 billion (Tordo et al., 2011). Oil and gas are the main resources used in production, energy, transportation and operation. The rapid development of the oil-producing countries such as Gulf Cooperation Council (GCC) countries, including Oman, was financed by oil income and resulted in robust economic growth, infrastructure development and the expansion of public goods provisions (Al-Lamki, 2000). Stevens and Dietsche (2008) argued that the oil sector is central to economic development in those oil and gas countries that depend on oil. In 2015 its contribution of 33.9% to Gross Domestic Product (GDP), 78.7% to government revenues and 59.4% to goods exports, as well as oil and gas extraction, underpinned many of the activities that Oman is keen on developing to diversify its economy, including the production of petrochemicals and aluminium, power generation, and water desalination (Oxford Business Group, 2017).

The oil and gas sector involves national and multinational companies. National oil companies were established by governments throughout the world in the 1970s (Mahdavi, 2014); such firms have strict control over oil reserves and gas all over the world (Nouara and DeCosterl, 2013). In 2012, national oil companies controlled between 73% and 95% of the world oil reserves (Mahdavi, 2014). National oil companies contribute to the development of national economies and energy security, and they play a significant role in the stability of the oil and gas market (Tordo et al., 2011).

Therefore, as a result of the importance of training evaluation in the national oil and gas industry in Oman, investigating the effect of training characteristics on training effectiveness in the industry in Oman is justified.

1.5.4 Health and safety training

Health and safety training primarily concerns the measurement of safety performance and preventing or reducing illness, injuries and death. Thus, the Committee on Safety and Health at Work in U.K (1972) proposed that there should be agreement on the significance of safety training (Hale, 1984). In the U.K., safety training involves the occupational health and safety regulator, the Health and Safety Executive (1984; 1996a; 1996b), the professional safety body (1994) and the International Atomic Energy Authority (1989; 1996) for the nuclear industry (Cooper and Cotton, 2000). With regard to safety regulations and guidelines, the Occupational Safety and Health Act (OSHA) involves 100 standards to protect the health and safety of workers and provide essential training guidelines (Ham, 2000; Robotham, 2001).

Safety training and its quality and processes are a key concern for the oil and gas industries (Kujath et al., 2010). Thus, effective safety training is critical to teach workers how to act in the event of accidents and ways to eliminate hazards and accidents faced in their work (Zin and Ismail, 2012). Similarly, Oberman (1996) emphasises the efficiency and effectiveness of safety training programmes that are appropriate for all employees across the entire organisation. Safety and health regulations require organisations to train employees, and employee safety training contributes to the prevention of occupational hazards. The World Health Organisation refers to occupational accidents as unexpected events that lead to injury in individuals and the temporary cessation of production due to damaged equipment (Sari, 2009). Hazards occur when a demand is found in a system that can lead to undesirable results and the failure of safeguards (Rothschild, 2006). Unsatisfactory interactions between employees and their work environments cause industrial accidents (Kujath et al., 2010). It seems that inadequate safety training among employees in the oil and gas industries is the root cause of accidents because employees do not have sufficient knowledge or skills to recognise potential hazards in the workplace or in the organisation. Accident statistics in the oil and gas industries show that the injury or death of workers due to occupational accidents is slightly higher than the average in other industries, due to explosions, fires and other major incidents (Attwood et al., 2006). Work accidents remain a problem in this sector, specifically in offshore oil and gas companies (Kujath et al., 2010).

Thus, the foregoing discussions have demonstrated the critical importance of the oil and gas industry, both in Oman and worldwide. The evaluation of the key problems demonstrates the challenges in a competitive industry characterised by higher than average levels of accident risk. Therefore, this research aim to evaluate in-depth the moderating effect of training characteristics, including training environment, training methods, trainer performance and behaviour, training content and training objectives, on the relationship among four Kirkpatrick : reaction, learning, learning, behaviour, and results, and intention to transfer learning in the Omani national oil and gas industry. Its further seeks to examine the subsequent effect of training characteristics on training effectiveness.

1.6 Aims and objectives

This study aims to identify, understand and evaluate the impact of training characteristics on training effectiveness within the context of the Omani national sector oil and gas industry. The research aims to develop a suitable framework not only for implementation in the industry in Oman but also for use by organisations in various sectors worldwide. Thus, this research is specifically concerned with attaining the following research objectives.

1.6.1 Research Objectives

- To identify four Kirkpatrick training (reaction, learning, behaviour and results) and intention to transfer learning, and the key training characteristics that influence them.
- To examine the effect of training characteristics (pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, training objectives) on expectations of the training environment, expectation of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results.
- To investigate the moderating impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content, training objectives) on the relationship between reaction, learning, intention to transfer learning, behaviour and results.
- To develop a conceptual framework and related set of hypotheses that defines the impact of training characteristics on training effectiveness in national oil and gas companies.
- To provide recommendations and suggestions for maximising training effectiveness in practice and contribute to the existing literature.

1.6. 2 Research questions

In order to accomplish the aim of the study, primary research questions were considered:

The primary research questions according to the main aim of the study are the following:

1- *What are the effects and moderating roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, and training objectives) on the relationships between training outcomes (reaction, learning, intention to transfer learning, behaviour, and results) during three separate time periods (before, immediately after, and 2–3 months after training)?*
2- *What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?*

1.7 Research Methodology

This study investigates the moderating influence of training characteristics on the relationship between training outcomes: reaction, learning, intention to transfer learning, behaviour and results, and, these factors' subsequent impacts on training effectiveness. To do so, this research has proposed a conceptual framework along with 30 measurable hypotheses based on prior literature. Therefore, the present study selected a positivist approach (Hussey and Hussey, 1997), to conduct the study as the primary focus of this research is to examine the proposed conceptual framework in an attempt to increase the understanding and to evaluate the influence of training characteristics on training effectiveness (reaction, learning, intention to transfer learning, behaviour and results).

This research has adopted a quantitative research approach as it follows a deductive method (Saunders et al., 2016), whereby it is empirically testing 30 hypotheses in this research to confirm or reject their validity. This requires a large amount of quantitative data collection and statistical analysis. Therefore, the questionnaire survey method was selected as the most appropriate to identify, understand and evaluate the impact of training characteristics on training effectiveness within the context of the Omani national sector oil and gas industry.

The data were collected using a longitudinal questionnaire survey. Questionnaires are a widely accepted and used tool to gather data in a survey format. The questionnaire is referred to as "a reformulated written set of questions in which respondents record their answers" (Sekaran, 2003, p. 236). The survey approach is considered the most appropriate technique, especially where there are social facts to be found and explored (Crotty, 1998). Additionally, this is the most appropriate technique for this study as it is low cost and efficient, and it can be used for large samples (Churchill, 1995; Collis and Hussey, 2014; Sekaran, 2003; Zikmund, 2003, Saunders et al., 2012*)*. This tool is suitable if the researcher knows what information is needed to answer the research questions, and to accomplish the aims and objectives of the research and ways to assess the variables of the study. To evaluate the variables of interest in this research, the three survey questionnaires were developed using a five-point Likert-type scale, with response options ranging from (1) strongly disagree to (5) strongly agree. This study used a web-based and self-completion questionnaires to attain versatility, speed and cost effectiveness.

A pilot test of the questionnaire was conducted in order to ensure that the research instrument operates well (Bryman and Bell, 2011). Based on the results of the pilot test, the researcher adjusted the questionnaire prior to going ahead with the final questionnaire. The main data collection was conducted by distributing a total of 800 complete surveys for each one of the three survey versions, before training, straight after completing the training and 2–3 months after training.

To statistically analyse the findings of the data collection, Statistical Package for the Social Sciences SPSS IBM 20.0 was used as the base software. It was employed to provide descriptive analysis and exploratory factor analysis. Also, structural equation modelling (SEM) analysis was performed using Analysis of Moment Structures (AMOS) software version 21.0. SEM analysis was applied in a two-step approach to validate the hypotheses and the performance of the proposed conceptual framework (Kline, 2005; Hair et al., 2014). First, a measurement model was used to examine the unidimensionality, validity and reliability of the latent constructs using confirmatory factor analysis (CFA). Second, the structural model was used to test the hypothesised relationships between the latent constructs in the proposed study framework.

1.8 Contributions

Although there has been extensive research that has investigated the impact of factors on training effectiveness, there has been limited empirical research on the impact of training characteristics on the four levels of Kirkpatrick's training evaluation model namely, reaction, learning, behaviour and results (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013) and intention to transfer learning. Therefore, empirical research evaluating training effectiveness factors is needed. This study is based on the development of a comprehensive theoretical framework that evaluating the impact of training characteristics on training effectiveness. To the best knowledge of the researcher, this is the first time such a theoretical framework has been tested empirically and theoretically. This study establishes an integrative theoretical framework that combines the evaluation of a set of factors on training effectiveness.

Previous studies have investigated the meditating effects of training characteristics on the relationships between reaction, learning, behaviour and results (e.g. Iqbal et al., 2011). Therefore, an investigation on the moderating effects of training characteristics is necessary (Homkiln et al., 2013). This study has contributed to the literature by empirically investigating the moderating effects of training characteristics on the relationship between reaction, learning, intention to transfer learning, behaviour and results.

Many of studies have focused on the effects of training characteristics after a training programme has been completed and they have looked at the four levels (reaction, learning, behaviour and results) either individually or in terms of the relationship between two discrete levels (Baldwin and Ford, 1988; Bates et al., 2007; Ghosh et al., 2011; Iqbal et al., 2011). Therefore, further empirical research on the evaluation effects of training characteristics on training effectiveness is needed. This study has contributed to the literature empirically by evaluating the effects of training characteristics on reaction, learning, intention to transfer learning, behaviour and results.

Although there are assumed links between the four levels of Kirkpatrick's model (Hung, 2010; Kirkpatrick, 1996), few studies have confirmed this correlation (Alliger et al., 1997; Alliger and Janak, 1989; Santos and Stuart, 2003). This study contributes to the development of Kirkpatrick's four-level model by expanding our understanding of the progressive, causal relationships between reaction and learning, and between behaviour and results. This study has contributed to the literature by the development of Kirkpatrick's four-level model by expanding our understanding of the progressive, causal relationships between reaction and learning, and between behaviour and results.

Most previous research has indicated that trainee reaction was the common criterions used by organisations to measure and evaluate the effectiveness of training, but few studies have examined training evaluation at the reaction level (Alliger and Janak, 1989; Arthur et al., 2003a). Therefore, further empirical research on training evaluation at the reaction level is required. This study has contributed to the literature empirically by investigating the impact of training environment, training methods and trainer performance and behaviour on the reaction level.

Previous research on training evaluations has focused on evaluating training outcomes after training is completed (post-test only) (Pineda, 2010; Warr et al., 1999). However, other researchers have suggested measuring training outcomes by administering tests before and after training (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). Therefore, this study was conducted at three separate times: before, immediately after and 2–3 months after training.

Although previous work has indicated that trainer performance and behaviour were the strongest factors affecting the transfer of knowledge to the workplace (e.g. Nikandrou et al., 2009), this study has contributed to the literature by showing that trainer performance and behaviour was the strongest factor contributing to reaction. Furthermore, the training environment (followed by trainer performance and behaviour) were the strongest factors supporting learning.

The finding of the previous studies indicated that training content was the strongest factor affecting the transfer of knowledge to the workplace (e.g. Bates et al., 2007; Lim and Johnson, 2002). This study has contributed to the literature by showing that training objectives (followed by training content) was the strongest factors affecting behaviour.

In summary, few studies have concentrated on evaluation of impact of training characteristics on training outcomes (reaction, learning, intention to transfer learning, behaviour and results), which are assumed important the extent literature. The findings of this thesis provided a novel contribution to the subject of training evaluation.

1.9 Thesis structure

The organisation of the thesis of this PhD is based on Phillips and Pugh (2010), who proposes that the PhD structure must include the following four main points: 1) background theory, 2) focal theory, 3) data theory and 4) novel contribution. This thesis consists of seven chapters as shown in Table 1.1. Later, there is a summary of each chapter.

Table 1.1 Chapters of thesis

Chapter One	Introduction
Chapter Two	Literature review
Chapter Three	Conceptual framework
Chapter Four	Research methodology
Chapter Five	Results analysis
Chapter Six	Discussion
Chapter Seven	Recommendations and conclusion

Chapter One: Introduction

Chapter One provides the background and an outline of the broad field discussed in the study. It set out the main concepts giving to the research problem, the significance of the study, and the study's aims and objectives.

Chapter Two: Literature review

Chapter Two is a critical review of academic literature on training and training evaluation. It describes and investigates various definitions of training and training evaluation and identifies and examines key aspects relevant to training, training evaluation and training effectiveness. It discusses different definitions of training and development.

Chapter Three: Conceptual framework of the study

The proposed conceptual framework to underpin the research in to training evaluation is presented in detail in Chapter Three. The basis of the framework is the extensive review of the relevant training evaluation literature presented in Chapter 2. It highlights and explains the main elements supporting the need to evaluate the impact of training characteristics on training effectiveness from a theoretical and conceptual perspective.

Chapter Four: Research methodology

Chapter four presents the methodology adopted for this research. In this chapter the identification and discussion of the research paradigm is set out. It elaborates the methodology adopted, philosophy, strategy, approaches, sources for gathering data and data collection. In this chapter there is discussion of data collection and related issues concerning sampling, the sample choices and the different sample size and groups.

Chapter Five: Results analysis

Chapter five presents the primary data. This chapter provides a summary of the results of the study, with an analysis. Issues relevant to training effectiveness in the Omani oil and gas industry and the evaluation of the impact training effectiveness factors are considered.

Chapter Six: Discussion

Chapter six discusses the research findings. This is related to an evaluation the impact of training characteristics on training effectiveness. In this chapter, the final revised framework for training evaluation is offered based on the interpretation of the findings of the study.

Chapter Seven: Recommendations and conclusions

The final chapter provides a précis of the main findings, an overall summary of the research, plus contributions and suggestions raised by the research. It acknowledges the study's limitations, suggesting further research areas and conclusing the study.

Chapter Two: Critical Review of the Literature

2.0 Introduction

This chapter reviews the literature surrounding training and development, and training evaluation. As outlined in chapter one, there is a need for scholarly research that explores the evaluation of training and development, as well as a need to investigate this issue in Arab countries. Therefore, it is necessary to construct a framework to develop and draw on what is already understood about training and development.

This chapter reviews various definitions of training and development. Background material is provided on different types of training, definitions of training evaluation, its benefits and challenges, training effectiveness, training elements, training evaluation models and their criticisms, training effectiveness measures and training characteristics. These are considered and explained in detail in order to help shape the conceptual framework that is used in this study. Following the discussion on the main themes, a critique of the literature that identifies the research issues related to training and training evaluation are presented and the gaps within it are described.

2.1 Training and development: definitions

Training and development is broadly recognised as one component of human resource (HR) practice. Training and development is defined as a planned process that is designed to advance the existing and future capacity of an organisation's human resources by adjusting employees' skills, knowledge and attitudes (Millmore et al., 2007). This paper uses Cascio's (1992) definition of performance as "an employee's accomplishment of assigned tasks" (Yamoah and Maiyo, 2013, p. 3). Further, training and development is a significant human resources and development activity in organisations (Smith, 1988). Human resources and development is becoming a broad term that covers all human resource activities and, training and development is part of those activities. Human resources development is defined as "the integrated use of training and development, career development and, organisational development to improve individual and organisational effectiveness" (Hamlin and Stewart, 2011, p. 206).

"Training" and "development" are often used interchangeably and many scholars see them as a single unit. However, each term has an independent meaning. The distinct meanings vary from one organisation to another as the implied meaning in one institution may vary considerably in another. However, basic components within the definitions show consistency. For example, "training" highlights the systematic development of the knowledge, attitude, skills and behaviour required by an individual to effectively perform a task. Training is also a process of supporting employees' abilities to improve and perform their tasks effectively (Goldstein and Ford, 2002). In addition, through training, employees learn the competencies that are required to perform effectively (Banfield and Kay, 2012). Training is also the most efficient method to improve knowledge and skills, and Armstrong (2013) claims that the use of methodical and intended instruction enables prompt learning.

The definitions above show that training is an instrument that can be used to solve specific problems in the workplace. As Swanson and Holton (2001) point out, "training is for the good of plant production– it is a way to solve production problems through people; it is specific and helps people to acquire skill through the use of what they learned" (p. 46). Development is used to describe long-term and durable changes. These changes could affect skills, knowledge or even the attitude of the employees in question. Armstrong (2006) describes development as a process in which individuals learn to progress from a present state of understanding and capacity to a future state in which higher-level skills, knowledge and competencies are required. Development has also been described as "the planned growth and expansion of the knowledge and expertise of people beyond the present job requirements" (Swanson and Holton, 2009, p. 226). Development is accomplished through systematic training, learning experience, work assignments and assessment efforts (Ketter, 2006). It can also be defined as "the acquisition of knowledge and skills that may be used in the present or future, the preparation of individuals to enrich the organisations in the future and the act of being involved in many different types of training activities and classes" (Ketter, 2006, p. 87).

From the above definitions of "training" and "development", it can be suggested that both terms involve filling in the knowledge gaps and skills of employees. Most definitions agree that training and development acts as a remedy for undesirable attitudes within organisations to improve effectiveness and efficiency, and improve performance. Both are associated with valuable benefits for individuals and organisations. In this study, training and development is used as a single term.

2.2 Types of training

Training has several definitions that are best appreciated by investigating the various objectives of the training. In this context, Ghuman (2010) and Armstrong (2013) categorise the different types of training as follows:

- Technical skills training develops skills, such as manual skills and information technology (IT) skills, that are needed to perform work duties, for example, during apprenticeships.
- Trainer training supports trainers in developing their skills in order to achieve training goals.
- Performance management helps workers upgrade their job performance by providing them with skills that reduce waste, improve the quality of work and so on.

- Personal training enables the person to manage his/her life and career, such as assertiveness, coaching, communication and time management.
- Problem solving/decision-making teaches individuals to solve difficulties by facing them in a systematic way.
- Management training helps managers improve their management skills by studying problems and find solutions.
- Mandatory training is determined to be essential by an organisation because it is necessary to reduce organisational risks and comply with policies and government guidelines.
- Interpersonal skills support the development of leadership, coaching and communication skills, as well as interpersonal skills, such as team building, group dynamics and neuro-linguistic programming.
- Business function training improves the knowledge and skills required for various business functions.
- Organisational procedures training informs and teaches employees about organisational practices, such as health and safety, performance management, equal opportunities, managing diversity policies and practices, induction programmes and so on.

This study focuses on health and safety training, which falls under organisational procedures, mandatory training and technical skills training.

2.2.1 Health and safety training

Health and safety training primarily concerns the measurement of safety performance and preventing or reducing illness, injuries and death. Additionally, the U.K. based Central Training Council of the Department of Employment (1965) proposes that safety training is critical to ensure the safety and protection of workers by preventing of accidents due to work hazards (Heath, 1982). Similarly, Sinclair et al., (2003) state that safety training is valuable because it is used to teach safe behaviour and because it offers practice time and motivates workers to do their work safely. Organisations that deal with safety training as a solution to work hazards point out that training is the hammer and safety is the nails (Blair and Seo, 2007). The safety training adopted within the organisation empowers the employees with directed handling and the application of specific procedures required for different materials that may be in use and procedures to be followed (Tofte, 2011). Safety training solves the problems related to safety work setting (Blair and Seo, 2007; Machles, 2007).

One of the techniques to reduce occurrences of injuries, illnesses and fatalities at workstations is occupational health and safety training (Robson et al. 2012), which is defined as planned efforts to support the learning of occupational health and safety competencies (Noe, 2016). Fifteen percent of Canadian workers receive occupational health and safety training annually (Robson et al., 2012).

Knowledge of the effectiveness of occupational health and safety training continues to improve (Burke et al., 2006; Robson et al., 2012). Robson et al. (2012) state that occupational health and safety training includes instruction on recognising and controlling hazardous situations, safe working practices, emergency procedures and preventative actions, which may help employees, avoid accidents.

Some studies found that health and safety training do not contribute to a reduction in the rate of accidents. Bell and Grushecky (2006) show that high injury rates persist even in companies that receive safety training due to high turnover rates among workers, which may influence the efficacy of training programmes. In their review on occupational health safety training, Robson et al., (2012) find that occupational health and safety training has an insignificant effect on health related outcomes (e.g., symptoms, injuries and illnesses). Moreover, Sinclair et al., (2003) show that a reduction in the injury rate is not associated with health and safety training at one food company.

Safety training is significant for daily work practices, so measuring safety training is important (Withers et al., 2012). Cooper (1998) adds that training is viewed as a contribution to achieve safe behaviour. Nevertheless, the evaluation of safety and health training is insufficient (Booth, 1986; Cooper, 1998). According to Cooper (1992), it is difficult to assess the effectiveness of the safety training if the objectives are not established from the beginning. Only 35% of the largest businesses in the US measure the impact of training in their organisations (American Society for training and development in Ho, 2016), with the majority of training evaluation measuring only trainees' overall satisfaction with training (Giangreco et al., 2009).

Several factors influence safety training. Burke et al., (2011) investigated the impact of safety training on knowledge and performance, and found that highly engaging safety training is more effective than less engaging safety training when hazardous events and exposure severity are high. Meanwhile, highly and less engaging safety training has comparable levels of effectiveness when hazardous events and exposure severity are low. Trainees may acquire knowledge from safety training, but they will not apply this knowledge if their work environments do not provide an opportunity to use the knowledge (Bahn and Barratt-Pugh, 2014). Burke et al., (2008) find that trainees will not transfer safety training to the workplace if the company does not encourage a safety culture in their internal policies. It also agreed that training is more successful if its effectiveness is measured (Bramley and Kitson, 1994; Mohamed and Alias, 2012).

To conclude, a healthy and safe environment is necessary for an organisation and its employees. Providing effective safety training has significant advantages and leads to on-going performance improvements (Blair and Seo, 2007). Nonetheless, very few researchers have reported a reduction in injuries as a result of safety training (Sinclair et al., 2003). The safety training has been ineffective, or else delivered well, but not integrated into the work setting so as to have an insignificant impact on performance (Blair and Seo, 2007). The following sections discuss training effectiveness in more detail.

2.3 The effectiveness of training

Understanding training effectiveness is meant to improve the process of training in order to accomplish objectives and goals (Homklin et al., 2013). The term training effectiveness consists of two basic concepts: training and its effectiveness on trainees (Borat et al., 2014). Effectiveness is defined as the achievement of a desired objective (Devi and Shaik, 2012). Training effectiveness enhances what trainees learn in training programmes, which is eventually implemented in the work environment (Bates and Coyne, 2005). There are two elements involved in training effectiveness: first measuring individual performance improvement as outcomes of training and second, the effectiveness of training processes in terms of measuring how training is delivered to trainees (Al Yahya and Mat, 2013). Therefore, this study investigates the impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content and training objectives) on training effectiveness (reaction, learning, intention to transfer learning, behaviour and results).

Measuring effectiveness has two major factors: the training programme and the evaluation of the training (Borate et al., 2014). Training evaluation is the best way to determine the effectiveness of training (Rafiq, 2015). With the information gathered through the evaluation, the organisation will be able to ascertain whether the training conducted was effective (Farjad, 2012). Therefore, an organisation must first identify the outcomes or criteria of evaluation to determine the effectiveness of a training programme (Arthur et al., 2003a; Noe, 2016). It does this by first considering Kirkpatrick's four levels model: reaction, learning, behaviour and results.

Although several models have proposed evaluating the effectiveness of training (Abdul Aziz, 2013; Alvarez et al., 2004), Kirkpatrick's four-level model is the most acceptable and recognised model among the different models used to measure training effectiveness (Xue, 2015). According to Noe (1986), training effectiveness is usually determined by assessing some combination of the criteria presented in Kirkpatrick's four-level model of training outcomes. Thus, both the participant's feedback regarding training, the acquisition of knowledge and skills, the application of learned skills and knowledge, and the effect of training on the organisation indicate the effectiveness of training (Kirkpatrick, 1967; Tracey et al., 2001; Vasudevan, 2014). Training effectiveness provides a full picture of what the training was able cover and what it was not able to cover (Manyika, 2014).

The effectiveness of training programmes in Arab organisation is generally low because of insufficient needs analyses, inappropriate programmes, inappropriate training methods and lack of support and reinforcement (Atiyyah, 1993). Training and development in many Arab organisations is not recognised as a significant organisational function that contributes to the organisation's success (Altarawneh and Aseery, 2016). Training and development in Jordan faces difficulties, such as lack of management and organisational support (Al- Tayeb, 1986). Nepotism, sectarianism, ideological affiliations and inter-office tensions by managers inhibit training effectiveness (Abdalla and Al-Homoud, 1995).

2.3.1 Training evaluation, effectiveness, training characteristics

Although Kirkpatrick's four-level model has been used to measure training effectiveness, it is criticised for not taking account of training design, trainee characteristics and work environment factors (Bates, 2004, Homklin, 2013). Training evaluation plays a major role in determining training effectiveness. Evaluation of training effectiveness is significant because it helps to make decisions related to the continuation of training, improvements in training and allocation of training resources (Devi and Shaik, 2012). Evaluation of training effectiveness can be referred to as "the measurement of improvement in the employee's knowledge, skill and behavioural pattern within the organisation as a result of training programme" (Al Yahya and Ma, 2013, p. 14). The closer the training outcomes are to the training objectives the more effective the training will be (Devi and Shaik, 2012).

Even though training evaluation is an important way to determine training effectiveness, other factors have an influence on the effectiveness of training (Vyas, 2004). Training effectiveness can be defined as the study of the individual, training and organisational characteristics that affect the training process before, during and after training (Alvarez et al., 2004). Or as function of the training design, the individual characteristic or the organisational context (Scaduto et al., 2008). Without effectiveness variables, it will be impossible to determine the achievement of the goals of the training (Mohammad, 2016). Hence, this study aims to evaluate the effect of training characteristics on training effectiveness (reaction, learning, intention to transfer learning, behaviour and results). Training characteristics, such as training environment, training methods, trainer performance and behaviour, training content and training objectives, contribute positively to the effectiveness of training (Hafeez and Akbar, 2015) if they are suitable and adequate. Thus, contextual factors cannot be ignored when assessing training effectiveness (Vasudevan, 2014).

Previous research on training evaluations has focused mainly on evaluating training outcomes at the end of training (post-test only) (Pineda, 2010; Warr et al., 1999). However, measuring training outcomes before and during training have suggested (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). Other studies have investigated post-training evaluations, focused on the influence of training characteristics by looking at Kirkpatrick's four levels either individually or in terms of the relationship between two discrete levels (Baldwin and Ford, 1988; Bates et al., 2007; Ghosh et al., 2011; Iqbal et al., 2011; Kraiger, 2002; Tannenbaum et al., 1993). Nevertheless, they have devoted less attention to the evaluation influence of training characteristics on training effectiveness (Bates, 2004; Homklin et al., 2013). Training cannot be appropriately measured in isolation from these surrounding factors (Tannenbaum et al., 1993). The following subsections discuss trainees' expectations for training to support improvement of training process.

2.3.2 Trainees' expectations for training

Trainees' expectations for training are critical to the development of training programmes (Clemenz et al., 2004). Positive reactions from trainees, learning, behavioural change and organisational results are expected from well-designed and well-administered training programmes (Noe, 1986). Thus, before actually taking a training programme, a trainee often has expectations about the quality of the design, delivery of the training and its relevance to their job. Training providers must therefore correlate their programmes with the needs and expectations of participants in order to be successful (Maria-Madela et al., 2010). Furthermore, understanding trainees' expectations for training can help trainers design and execute more effective training that meets the expectations of trainees (Clemenz et al., 2004; Noe, 1986). Trainers should attempt to identify trainees' expectations and desires, while staying as flexible as possible to meeting those needs (Tannenbaum et al., 1991). Training effectiveness can be enhanced if the training coordinator is able to establish trainees' expectations in advance, so that they can model the programme to be able to utilise appropriate training approaches that will ensure trainees' expectations are met (Ng'ang'a et al., 2013).

Trainees' expectations and perceptions before participation in a training programme may affect their satisfaction with the training, as well as their intention to transfer learning to their work setting, motivation to learn, post-training commitment and self-efficacy (Baldwin and Majuka, 1991; Hicks and Klimoski, 1987; Ryman and Biersner, 1975; Tannenbaum et al., 1991). Trainees who receive a realistic training preview and a high degree of choice are more likely to believe the workshop was appropriate for them (Hicks and Klimoski, 1987). These participants also profited more from the training and showed more commitment to their decisions to attend the workshop compared to trainees who received traditional announcements and had a low degree of choice. Meanwhile, Tannenbaum et al., (1991) show that trainees' expectations and desires before training and their perceptions of what occurred during the training influence their feelings of fulfilment after the training, subsequent post-training commitment, self-efficacy and motivation. Training fulfilment is defined as "the extent to which training meets or fulfils a trainee's expectations and desires" (Tannenbaum et al., 1991, p. 759).

Training participants enter training programmes with different expectations (Hoiberg and Berry, 1978). Clemenz et al. (2004) suggest five factors that shape trainees' expectations for training: (1) courtesy, (2) entertainment, (3) climate, (4) tangibles and (5) relevance. The trainees also have expectations about the trainers. Ng'ang'a et al., (2013) show that 35.10% of trainees expect trainers to be supportive and 45.74 % expected excellent presentations and clear communication from their trainers when delivering content, in addition to eloquent presentation and mastery of the content. Malik and Grover (2014) show that 70% of participants consider supervision an important element of training, 25% expect training to increase their prospects in their field, 15% expect it to improve their theoretical knowledge about human behaviour and 15% expected it to improve their personal development. On the other hand, unmet expectations can affect training outcomes negatively (Hoiberg and Berry, 1978; Hicks and Klimoski (1987); Tannenbaum et al., 1991). Hence, determining trainee's expectations may help to improve training process. The following section discusses the training process.

2.4 Main elements of training effectiveness

The key elements of training effectiveness are based on the following four major stages of the training processes:

- Identifying training needs;
- Deciding what type of training is required to fulfil those needs;
- Employing qualified and trained trainers to implement training;
- Following up and assessing training to guarantee its effectiveness (Armstrong, 2013).

Effective training should cover all training process which involve to clearly training goals and objectives, make and deliver content of training related to work context, used of suitable methods of training and qualified and trained trainer (Armstrong, 2006). To design an effective training programme, it is important to consider the different stages of the training process (Luong, 2015). The training process consists of all events and tasks conducted by an organisation or company to carry out training, including hiring staff from various organisations (Armstrong, 2003). In this regard, Torrington and Hall (1991) propose that training processes should typically begin by determine the training needs and finish with an evaluation. Kirkpatrick and Kirkpatrick (2006) reveal that the following factors should be considered for effective training: identifying aims and objectives, selecting issues to be covered by the training content, selecting participants for the training programme, establishing a suitable schedule, identifying training techniques and facilities, hiring skilled instructors, selecting and preparing audio and visual aids, managing and organising the training programme and, following up, and evaluating the training programme. The following subsection discuss only training evaluation as the focus of this research.

2.4.1 Evaluating the training and development programme

Training evaluation measures specific outcomes to determine the benefits of training for the organisation or trainees (Noe, 2016). Goldstein (1993, p. 147) defines training evaluation as "the process of collecting descriptive and subjective information essential for making effective training decisions regarding selection, adoption, value and modification in the training activities". Training evaluation is usually considered the last step in the training cycle, but Devins and Smith (2010) suggest that it should never be conducted at the end of a programme because that may be too late to adjust the programme. Evaluation should be an active, on-going process throughout the entire training cycle (Devins and Smith, 2010). In fact, evaluation should be part of the programme, thus making it an on-going activity. Most researchers usually confirm that evaluation is significant but it is a difficult stage in the training process and the last process in a systematic training process (Goldstein and Gillan, 1990). Finally, the evaluation experience is likely to be more positive if is adopted at the beginning of the programme. The following section describes distinction between training evaluation and training effectiveness.

2.5 Training evaluation versus training effectiveness

With the high level of investment in staff training (Salas et al., 2008), evaluation becomes a key measure of its organisational contribution. Kirkpatrick and Kirkpatrick (2006) state that employers are mostly motivated to perform evaluations because it helps them to determine whether training was successful, as well as to identify ways to develop training. Bimpitsos and Petridou (2012) confirm that the significance of training evaluation is valuable if it is considered a vital part of training. Training evaluation refers to a system for assessing the results of a training programme in order to determine if learners accomplished the learning objectives (Tan et al., 2003).

Although the terms "effectiveness" and "training evaluation" are used interchangeably (Ostrof, 1991), several differences between training effectiveness and training evaluation have been identified (Kraiger et al., 1993; Alvarez et al., 2004). Training effectiveness is a theoretical approach to understanding learning outcomes, thus providing a macro view of training outcomes, whereas training evaluation is a methodological approach for measuring learning outcomes that provides a micro view of training results (Alvarez et al., 2004). Furthermore, training evaluation describes what happens because of the training while training effectiveness determines why individuals learned or did not learn and how the intended outcomes of training occur (Kraiger et al., 1993; Mohamed and Alias, 2012). Therefore, information collected from the evaluation of training effectiveness can be used to further improve the training programme provided (Deros et al., 2012). Further definitions of training evaluation are provided below.

2.5.1 Defining evaluation

Training evaluation is defined in several ways according to its intended outcome. Table 2.1 presents some key definitions of training evaluation in the existing literature related to this study.

Foxon (1989) states that the majority of authors view evaluation as an effort to collect data in order to illustrate the wealth of information of value training that can be obtained from gathered information to determine the contribution of training finically and socially. Evaluation is defined as “a systematic process used to determine the merit or worth of a specific context” (Giberson et al., 2006, p. 43). In same view, it is defined as the assessment of value or worth (Foxon, 1989, p. 12). In contrast, Williams (1976) notes that value is a somewhat vague term and is suggested evaluation as the assessment of value or worth (Foxon, 1989). This view has contributed to other definitions of evaluation (Foxon, 1989) such as one focus on the determination of programme effectiveness. Thus it is defined as “the process that may be used to determine the effectiveness and/or efficiency of instructional programmes” (Brown, 2007, p. 820). In terms of its ability to measure the social and financial value of training, evaluation is defined in the Glossary of Training Terms (Manpower Service Commission, UK) as “the assessment of a total value of the training system, training course or programme in social as well as financial terms” (Al-Athari and Zairi, 2002, p. 241).

Further in terms of its ability to offer input for making effective decision it is defined as “A systematic process of collecting data in an effort to determine the effectiveness and/or efficiency of training programmes and to make decisions about training” (Saks and Burke, 2012, p. 119). In same view, it is defined as “the process of collecting descriptive and subjective information that is essential to making effective training decisions regarding the selection, adoption, value and modification of training activities” (Goldstein and Ford, 2002, p. 138). In terms of its focus on determining how to improve performance, is defined as “the determination of the extent to which a programme has met its stated performance goals and objectives” (Topno, 2012, p. 16). In terms of its ability to give feedback, it is defined as “any attempt to obtain information (feedback) on the effects of a training programme and to assess the value of the training in light of that information” (Topno, 2012, p. 16).

Although there is a lack of agreement on the definition of evaluation, it can be suggested that only two definitions from table 2.1, include the gathering and analysing of information. Training evaluation is a systematic procedure of gathering and analysing information to determine the effectiveness and efficiency of training interventions (Brown and Gerhardt, 2002; Brown and Sitzmann, 2011; Saks and Burke, 2012; Noe, 2016). Hence, in this study, definition of Brown (2007), to evaluation is suit one.

Table 2.1 Definitions of training evaluation

Evaluation outcomes	Definition	References
Judgements about the value and worth of the programme	A systematic process used to determine the merit or worth of a specific context.	Giberson et al., (2006, p. 43)
	Evaluation as an assessment of value or worth.	Foxon (1989, p. 12)
The social and financial value of the programme	Assessment of the value of a training system, training course or programme in social and financial terms.	Al-Athari and Zairi (2002, p. 241)
Offering input for making effective decisions	The process of collecting descriptive and subjective information that is essential to making effective training decisions regarding the selection, adoption, value and modification of training activities.	Goldstein and Ford (2002, p. 138)
	A systematic process of collecting data in an effort to determine the effectiveness and/or efficiency of training programs and to make decisions about training.	Saks and Burke (2012, p. 119)
Determining how to improve performance	The determination of the extent to which a programme has met its stated performance goals and objectives	Topno (2012, p. 16)
Determining programme effectiveness	A process that may be used to determine the effectiveness and/or efficiency of instructional programmes.	Brown (2007, p. 820)
Giving feedback	Any attempt to obtain information (feedback) on the effects of a training programme and to assess the value of the training in light of that information.	Topno (2012, p. 16)

2.5.2 Benefits of training evaluation

Most organisations know the importance of training, but often pay little attention to evaluating their training, even though it can lead to benefits for the organisation and its employees. Kearns and Miller (1996) argue that training evaluation ensures buy-in and commitment at all levels. Brinkerhoff (1988) argues that effective evaluation is the one thing that can provide evidence of the benefits of training to individuals, jobs and organisations, such as the enjoyment of trainees taking part in the programme, progress in attaining knowledge, skills and attitudes, good transfer of learning to the workplace, accomplished cost-benefits and organisational benefits. The benefits of training evaluation are discussed next.

2.5.2.1 Giving feedback

Training evaluation aims to identify the cost-benefit ratio of employees' development programmes in order to offer feedback on the relevance of the training and to define how trainees benefit from training (Phillips and Chagalis, 1990). Feedback is defined as information that is given to trainees about their performance (Baldwin and Ford, 1988; van de Ridder et al., 2008). Giving feedback to the programme designers, trainers and trainees (Kraiger, 2002; Stewart and Brown, 2011) is beneficial. According to Dhliwayo and Nyanumba (2014), feedback is necessary for both the trainer and trainees: the trainer can clearly define the results that have been accomplished and how they can be improved, while trainees need to know how well they are doing at all stages in their training, which helps them to improve their performance. Evaluation identifies the strengths and weaknesses of trainees taking part, in terms of personal characteristics and their ability in gaining skills, which is important for the organisation to determine employees' performance (Yamoah and Maiyo, 2013). Furthermore, giving feedback helps to improve future training programmes (Kirkpatrick and Kirkpatrick, 2006; Rothwell and Kazanas, 2003). Evaluation provides information how to improve future programmes (Kirkpatrick and Kirkpatrick, 2006).

2.5.2.2 Support in decision making

Training evaluation helps business leaders decide whether to continue or discontinue a training programme (Rothwell and Kazanas, 2003; Kraiger, 2002; Kirkpatrick and Kirkpatrick, 2006) or whether to improve a training programme (Kirkpatrick and Kirkpatrick, 2016; Wick et al., 2010). Decision making is defined as "the selection based on some criteria from two or more possible alternatives" (Chaturvedi, 2013, p. 70). Training evaluation also supports decisions about participation in human resources development programmes (Topno, 2012). Training evaluation helps to make effective decisions regarding training (Stewart and Brown, 2011), and helps to build credibility and a solid foundation for training and development decisions (Kearns and Miller, 1996). It further indicates the ways in which a training intervention might be improved that training evaluation is conducted after finishing training programme, while the suggestion is to be done before, during and after the training course (Kirkpatrick, 1996). Participants in human resource development activities or training programmes can review what they have learn and consider how to make modifications in the context of the activity, as well as what can be used in the workplace (Easterby-Smith, 1994).

2.5.2.3 Quality control

Evaluation is a type of quality control (Dahiya and Jha, 2011) that determines the value of training providers, costs and the conduct of the participants, and eliminates waste (Newby and Bramley, 1984; Esaterby-Smith, 1994; Foxon, 1989). Training evaluation attempts to measure training impact on organisation (Akin-Ogundeji, 1991) and making links from training to organisational activities and to consider cost effectiveness (Topno, 2012). Quality control is defined as a process improvement activity employed to ensure a certain level of quality of a product or service (Talukder, 2010). Kunche et al., (2011) argue that if the training is not effective, then it can be dealt with accordingly through improvements. Thus quality control is exercised through measurement of the achievement of the objectives by both trainees and trainers that the needs originally identified were satisfied and the evaluated of appropriateness of training methods to be used (Akin-Ogundeji, 1991; Bramley and Kitson, 1994).

2.5.2.4 Transfer of learning

Kirkpatrick and Kirkpatrick (2006) and Tracey et al. (1995) reveal that training evaluation should assess the training outcomes and application of learned skills in the work place. According to Grove and Ostroff (1991), transfer of learning is an indicator of how well the training programme related to the job. It also determines the occurrence of behavioural change (Saka and Burke, 2012) and the extent of transfer of learning (Topno, 2012). In addition, Bartlett (2001) states that training evaluation helps to measure the improvement in performance and transfer of learned skills to the workplace in order to establish training effectiveness. Brinkerhoff (2006) assumes that if an employee shows positive change in their behaviour in the work place, then it means that the training was successful.

2.5.2.5 Achieving organisational objectives

According to Grove and Ostroff (1991), training evaluation is performed to meet the goals and objectives of the organisation, and to determine if participants liked the programme and whether they thought it had a positive effect on the job performance (Goldseting and Ford, 2002). The links between training and development, and strategic and operational business objectives are also determined through evaluation (Kearns and Miller, 1996). Training evaluation focuses on determining the extent to which training has responded to the needs of the organisation and its translation in terms of impact and profitability (Pineda, 2010).

2.5.2.6 Determining the effectiveness of training

Arthur et al., (2003a) and Baldwin and Ford (1988) stress that the selection of criteria to evaluate training helps to determine its effectiveness. Training effectiveness is defined as "the extent to which the training objectives or training's goal are achieved" (Homklin et al., 2014, p.2). Evaluations aim to verify and improve the effectiveness of training (Kirkpatrick and Kirkpatrick, 2006). In addition, Collis (2002) states that if there is no intention to evaluate training or learning, then training or learning is misunderstood because evaluation offers a review of the training programme, course content, materials, methods, trainer performance, etc. In other words, evaluating training outcomes is an important part of the learning process (Mann and Robertson, 1996).

2.5.2.7 Determining the progress of employee performance

Organisations make considerable investments in training and development (Elnaga and Imran, 2013; Imran and Tanveer, 2015) because the success or failure of an organisation is based largely on employee performance (Hameed and Whaeed, 2011). Evaluation is essential to determine whether training has caused a change in employee performance. Goss et al., (1994) propose several benefits of analysing and evaluating employee performance: First, reviewing employee performance against the goals of the training, as well as identifying the strengths and weaknesses of individuals both in terms of their personal characteristics and skills, are important for the organisation (Yamoah and Maiyo, 2013). Cascio (1992) suggests setting pre-determined criteria to measure employee performance because it is a difficult metric to measure (Yamoah and Maiyo, 2013). In other words, employee performance is measured and assessed against the set standards of performance, which are established by the top level of management (Sultana et al., 2012). Yamoah and Maiyo (2013) suggest that expectations around performance have to be set before employees are judged to be under performing. It clear that measuring performance using a pre-determined set of criteria is the preferred method.

To conclude, training evaluations are necessary to measure changes in knowledge, improvement of skills and attitudes of workers and, to achieve for organisations objectives, to provide feedback to determine the progress of employee performance, to determine the effectiveness of training, to achieve organisational objectives, to transfer learning, to ensure quality control and to support in decision making. These benefits can only be achieved if training programmes are effective. Table 2.2 summaries the potential benefits of training evaluation and why it is important.

Table 2.2 Benefits of training evaluation

Potential benefits /important of training evaluation	Related literature
Justifying the cost and benefits of training	Grove and Ostroff (1991); Kearns and Miller (1996); Kraiger (2002); Phillips and Chagalis (1990); Pineda (2003, 2010); Reid and Barrington (2011).
Giving feedback	Phillips and Chagalis, (1990); Kraiger (2002); Brown, (2007); Kirkpatrick and Kirkpatrick, (2006); Reid and Barrington (2011); Rothwell and Kazanas (2003).
Supporting decision making	Brown, (2007); Kearns and Miller, (1996); Kraiger, (2002); Rothwell and Kazanas (2003).
Controlling quality	Bramley and Kitson, (1994); Esaterby-Smith (1994); Foxon (1989), Kirkpatrick (1996); Reid and Barrington, (2011); Newby and Bramley (1984).
Transferring learning	Baldwin and Ford, (1988); Bartlett, (2001); Brinkerhoff, (2006); Burke and Hutchins, (2007); Grove and Ostroff (1991).
Contributing to organisational objectives	Bartlett, (2001); Kearns and Miller (1996); Kirkpatrick and Kirkpatrick, (2006); Rothwell and Kazanas (2003).
Determining the effectiveness of training	Arthur et al., (2003a); Baldwin and Ford, (1988); Grove and Ostroff, (1991); Kirkpatrick and Kirkpatrick, (2006); Tracey et al. (1995).
Determining the progress of employees performance	Brinkerhoff, (2006); Goss et al., (1994); Grove and Ostroff (1991); Kearns and Miller (1996); Rothwell and Kazanas (2003).
Identify training objectives and learning results	Baldwin and Ford, (1988); Bartlett, (2001); Brinkerhoff, (2006); Campbell (1998); Esaterby-Smith (1994); Kearns and Miller (1996); Rothwell and Kazanas (2003).

2.5.3 Challenges for training evaluation

Several barriers to training evaluation have been identified (Abdalla and Al-Homoud, 1995; Abernathy, 1999; Al-Fathaly and Chakerian, 1983; Al-Tayeb, 1986; Athari and Zairi, 2002; Bedingham, 1997; Griffin, 2010; Hung, 2010; Muna and Bank, 1993; Wang and Wang, 2005; Santos and Stuart, 2003). Santos and Stuart (2003) state that from analytical and managerial perspective, the main barriers are to evaluating bottom line training outcomes (i.e., reaction and learning). Furthermore, it is necessary to identify barriers to training evaluation in order to overcome them and ensure accurate evaluation results. Simmonds and Gibson (2008) argue that training evaluation can improve programme effectiveness if it is properly conducted. Therefore, knowing all the factors that facilitate or inhibit training outcomes helps to ensure training effectiveness (Kennedy et al., 2014). Griffin (2010) identifies the most common difficulties of training evaluation. Those are described next.

2.5.3.1 The general beliefs of top management regarding training evaluation

Managers believe that training automatically makes employees more capable of performing their duties, so they do see the need to evaluate it (Hashim, 2001). Furthermore, managers generally believe that training leads to good results. Barron (1996) states that managers generally believe that a well-trained worker will automatically be a productive employee. Therefore, professionals either do not believe in conducting training evaluations, or they lack the skill to do so (Swanson, 2005). Some professional are not familiar with the ways evaluations may add value or positively affect the organisation (Spitzer, 1999). The belief is that training evaluations are costly and time consuming, while often inhibiting the activities of the company. Bedingham (1997) and Athari and Zairi (2002) confirm that training evaluation challenges that prevent organisations from conducting evaluation are a time-consuming procedure and high costs of doing evaluation.

2.5.3.2 Lack of experience and tools

Few corporations evaluate training because it is costly, and there is little management cooperation and few unqualified people to conduct the evaluations (Vidal-Salazar et al., 2012). Evaluators who are charged with evaluating trainings may not have the skills, knowledge or expertise to conduct training evaluations. Wang and Wang (2005) state that the lack of resources and expertise reduce the opportunities of conducting training evaluation. Bedingham (1997) finds that the lack of experience with training evaluation among professionals results in less commitment to improve trainings top management. Hung (2010) proposes that the high level of professional ability required to evaluate behavioural change and results prevents trainings from being evaluated because evaluators find themselves in extremely difficult situations that require extra resources.

The lack of qualified people to conduct evaluations is also a problem in Arab countries. Altarawneh (2009) finds that most Jordanian Banking Organisations rely on external providers to evaluate their training and development programmes. Rajasekar and Khan (2013) show that training evaluations for Omani public organisations are carried out according to government guidelines, but evaluators lack the skills to carry out these tasks effectively.

2.5.3.3 Organisational obstacles

Personal and organisational restraints, such as costs, limited capacity, capability issues, lack of time, difficulty with obtaining relevant information, lack of organisational support and insufficient evaluation systems, prevent experts from evaluating trainings (Griffin, 2010). As discussed earlier, training evaluation faces challenges, such as time-consuming processes, implementation problems and high costs (Bedingham, 1997), while Wang and Wang (2005) show that the lack of organisational culture limits efforts to evaluate trainings.

There are several other obstacles related to evaluating training, such as the cost involved difficulty with creating controls, lack of measurement tools, unqualified evaluators, cumbersome and complex numerical work, identifying the relationship between training and results, variables working together, unclear outcomes of evaluation processes and difficult to offer significant information as the evaluation results being too theoretical (Hung, 2010). Therefore, it is unsurprising that few corporations practice training evaluations. Aside from these constraints, the lack of connection of between training evaluation and organisational strategy and objectives reduces the effectiveness of training evaluation.

The lack of interest among top managers to conduct training evaluations reduces implementation. Saks and Haccoun (2009) argue that managers do not conduct evaluations because there is no demand for it, and there are difficulties with isolating the impact of training from other variables that might influence employees and the organisation. Griffin (2010) indicates that learning and development (LD) specialists say evaluations are costly, have limited capacity and capability issues, take too much time, make it difficult to obtain relevant information, require more organisational support and are insufficient evaluation systems. Therefore, there is a reduction in the requirement for conducting evaluation from managers and there is little or no demand from clients to evaluate trainings seriously where trainees attend training to enjoy it, forget and carry on their work same as before (Hashim, 2001).

2.5.3.4 Lack of systematic training evaluation

The majority of training evaluation is based on trainee reactions, which is the first level of the Kirkpatrick model (Saks and Haccoun, 2009; Plant and Ryan, 1992; Arthur et al., 2003; Oostrom and van Mierlo, 2008; Saks and Burke, 2012). Level 1 (reaction) measures trainees' satisfaction, Level 2 (learning) measures the acquisition of knowledge and skills, Level 3 (behaviour) measures the transfer of learning to the workplace and, finally, Level 4 (results) assesses the overall impact of training in the organisation (Kirkpatrick and Kirkpatrick, 2006). The evaluation of these four levels should continue after the initiation of any training programme. In the U.S., 88% out 199 of participants reported that their organisations used Level 1 evaluations, 83% used Level 2 evaluations, 60% used Level 3 evaluations and 35% used Level 4 evaluations (Association for training and development in Ho, 2016). In Canada, Saks and Burke (2012) found that organisations are most likely to evaluate reaction and least likely to evaluate behaviour and results.

Attiya (1993), Al-Athari and Zairi (2002), and Altarawneh (2009) find that reaction is the most widely measured level of training effectiveness in Arab counties. Attiya (1993) argues that most Arab organisations focus on evaluating reaction by distributing questionnaires to the participants and getting their responses about the content, instructors, materials and resources that were used in the programme. Abdalla and Al-Homoud (1995) state that there is no systematic follow up evaluation to measure the effectiveness of the training programme. Furthermore, Arab organisations encounter problems with processing evaluations, finding suitable evaluation techniques, finding criteria to evaluate programmes or languages, finding time to go through the process of evaluation and compiling the data required for evaluation (Altarawneh, 2009). Therefore, this study investigates the factors that influence training effectiveness (reaction, learning, intention to transfer learning, behaviour and results) in order to overcome these difficulties in Arab organisations, including those in Oman. The following section discusses training evaluation models to measures specific outcomes of training to determine the training benefits.

2.6 Evaluation models

Many varieties of training evaluation models have been developed over the previous four decades (Passmore and Velez, 2012), and different models are used by organisations to evaluate training effectiveness (Topno, 2012). Training evaluation models purpose is to help find the dimensions or factors that should be considered when evaluating training effectiveness (Tzeng et al., 2007). In general, training evaluation models can be grouped into two major categories: goal-based approaches (such as Kirkpatrick's four-level model used in this research) and Kaufman's five levels of evaluation and, system-based approaches, such as the context, input, process, product model, input-process-output model and training validation system; Philips, 1991). Finally, goal-based and system-based models have dominated training and development literature in recent years (Dahiya and Jha, 2011).

The two types of evaluation models have specific characteristics. The goal-based approach may help practitioners think about the purposes of evaluation, ranging from the purely technical to the covertly political (Eseryel, 2002). This approach to evaluation helps to create well-defined goals and seeks to determine if those goals have been accomplished. The system-based approach helps to define the steps necessary to achieve goals and presents ways to utilise the findings to improve training (Eseryel, 2002). It also focuses on whether the intervention was effective and efficient (Zinovieff and Rotem, 2008). The macro-view approach focuses on a particular training event and analyses and explains its activities without explicitly accounting for environmental elements surrounding the training activities. The micro-based model focuses on the internal and external organisational factors that influence training activities (Al-Khayyat and Elgamal, 1997).

Different frameworks for the evaluation of training programmes have been proposed based on these different approaches (Eseryel, 2002). Many models developed by academics are based on the goal-based approach, such as Kirkpatrick's four-level model, which is used in this research. Furthermore, the goal-based approach is a micro view, while the system-based approach, which is seldom found in the literature, takes a macro view (Dahiya and Jha, 2011). Systems-based models may not provide sufficient granularity, they do not represent the dynamic interactions between the design and the evaluation of training, few of them provide detailed descriptions of the processes involved in each steps and none provide tools for evaluation (Dahiya and Jha, 2011). Table 2.3 presents ten evaluation models for training and development in organisations, as suggested by Chang (2010), Jamjoom and Al-Mudimigh (2011), Russ-Eft et al., (1997), Passmore and Vele (2012),Werner and DeSimone (2012), and Topno (2012).

Table 2 3 Training evaluation models

	Model	**Levels**	**Model Type**	**Weakness**
1	Kirkpatrick's four-level model (1959)	Reaction, learning, behaviour, results	Micro view	Fails to take into account intervening variables affecting learning and transfer.
2	Kaufman's and Keller's five levels of evaluation (1994).	Input and process, acquisition, application, organisation output, societal outcomes	Micro view	Lack of clarity on Kaufman's five levels of evaluation aspects.
3	Phillips'return on investment model for evaluation (1996).	Reaction, learning, application, implementation, business impact, return on investment	Micro view	Return on investment is difficult to measure because it is subjective.

4	Stufflebeam's Context, input process, product model (1983).	Context, input, process, product,	Macro view	Fails to give information about what standards are more operant and what processes are essential to enabling decision makers to apply value criteria.
5	Bushnel's Input, process, output model (1990).	Input process, output, outcomes,	Macro view	Lack of knowledge to operate and implement instructions and factors that influence evaluation results.
6	Warr et al.'s Context, inputs, reactions outcomes evaluation model (1970).	Context, inputs, reactions outcomes	Mixed micro and macro view	Fails to present enough information about current training conditions and no behavioural focus.
7	Brinkerhoff's six-stage model (1987).	Goal Setting, programme design, programme implementation, immediate outcomes, intermediate or usage outcomes, impacts and worth	Uses different measures	Suitable only for certain situations, such as when the employer and training organisers are closely related or when an evaluation design has already been built during the training process or where there are no competing deadlines or reduced budgets.
8	Kraiger et al.'s learning outcomes model (1993).	Cognitive, skill-based, affective	Uses different measures	Inadequate to measure learning and unable to differentiate between learners at higher levels of cognitive progress.
9	Holton's HRD evaluation and research model (1996).	Learning, individual performance, organisational results	Uses different measures	Only a description of the order of influences on outcomes in individual learning experiences with no emphasis on feedback loops.
10	Brinkerhoff's Success case method (2003).	Focus and planning, impact model creation, administration of a survey to gauge	Uses different measures	Lack of understanding of the difficulties that trainees will face when back at their workstations.

		success rates, interviews to determine successful and unsuccessful training, formulation of conclusions		

Adapted based on Chang (2010), Jamjoom and Al-Mudimigh (2011), Russ-Eft et al., (1997), Passmore and Vele (2012), Werner and DeSimone (2012), and Topno (2012).

The following sections (2.7 and 2.8) discuss the most important training evaluation models in the literature for the two approaches and alternative training evaluation models that directly or indirectly relate to Kirkpatrick's four levels model proposed by Kirkpatrick (1959), Warr et al. (1970), Stufflebeam (1983), Brinkerhoff (1987, 2003), Bushnell (1990), Kraiger et al. (1993), Kaufman and Keller (1994), Holton (1996) and Phillips (1996).

2.6.1 Training evaluation models using the goal-based approach

In Kirkpatrick's four-level model, which is goal-based, measurements are the result of integrating macro and micro analyses in which clear and achievable goals are broken down into logical processes (Kirkpatrick, 1996). The four training outcomes are reaction, learning, behaviour and results. In contrast, system-based models focus on important components and their interactions, which enables designers of training programmes to examine the training process (Dahiya and Jha, 2011). Compared to the system-based models, Kirkpatrick's four-level model tends to represent interactions between the design and evaluation of training and is simple to use. This effective model helps identify complex processes and presents reality in a simplified and clear form (Goldstein, 1993; Molenda et al., 1996; Van Dyk et al., 1997).

Furthermore, the Kirkpatrick model is the basis for most training evaluation approaches (Nickols, 2005). Kirkpatrick's (1959) four-level model is more popular among academics and human resources development practitioners and many other models are based on this model (Holton, 1996). It is also the model upon which most other models have been based since Kirkpatrick's model was created in 1959. Furthermore, one of the key strength of Kirkpatrick's four-level model is its identification of behavioural change in learners, as well as its emphasis on the change in their abilities and their application of new knowledge to their jobs (Tenant et al., 2002). The model also reports on the training outcomes, which help to determine whether a training programme should be continued and/or improved (Reio et al., 2017). This model is simple to use and is easily understood by human resource practitioners designing evaluation tools (Robson and Mavin, 2014).

Another strength is that it provides a viable, systematic, formative evaluation system (Reio et al., 2017). All four levels of Kirkpatrick's training evaluation model may be useful for both formative and summative purposes because reactions and learning focus on the learning environment or experience of the learner, and are captured at the end of the training in the training setting by the facilitator (Long, 2005). Summative evaluation is defined as evaluation that is conducted after completing a programme and for the benefit of some external audience or decision-maker, such as a funding agency or future users (Madaus and Kellaghan, 2002). Formative evaluation is referred as "evaluation cycles [that] occur during the training process" (Hayes et al., 2016, p. 200). Meanwhile, behaviour and results focus on the transfer of training to the work environment, are captured in the work setting and require management involvement. Following on from view of formative and summative evaluation, this study aims to evaluate the impact of training characteristics on training effectiveness (reaction, learning, intention to transfer learning, behaviour and results). The following section compares Kirkpatrick's four-level model with other training evaluation models.

2.7 Kirkpatrick's four-level model

Kirkpatrick's model (1959) has been used to measure training effectiveness for over 50 years. As indicated in Figure 2.1, Kirkpatrick's model sets out what be considered to be the key evaluation criteria to measure the effectiveness and/or efficiency of training programmes in order to identify weaknesses and improve future instruction programmes (Saks and Burke, 2012). Similarly, Milne (2007) shows that Kirkpatrick's model is the most established framework to measure evaluation criteria. Newstrom (1978), Alliger and Janak (1989), Holton (1996), Bassi and Cheney (1997) and Bates (2004) have stressed that this model is a widely accepted approach in the field of training and development, and by training specialists to evaluate training programmes. This model is considered a popular model for attempting to assess training effectiveness (Nickols, 2005; Khalid et al., 2012; Saks and Burke, 2012).

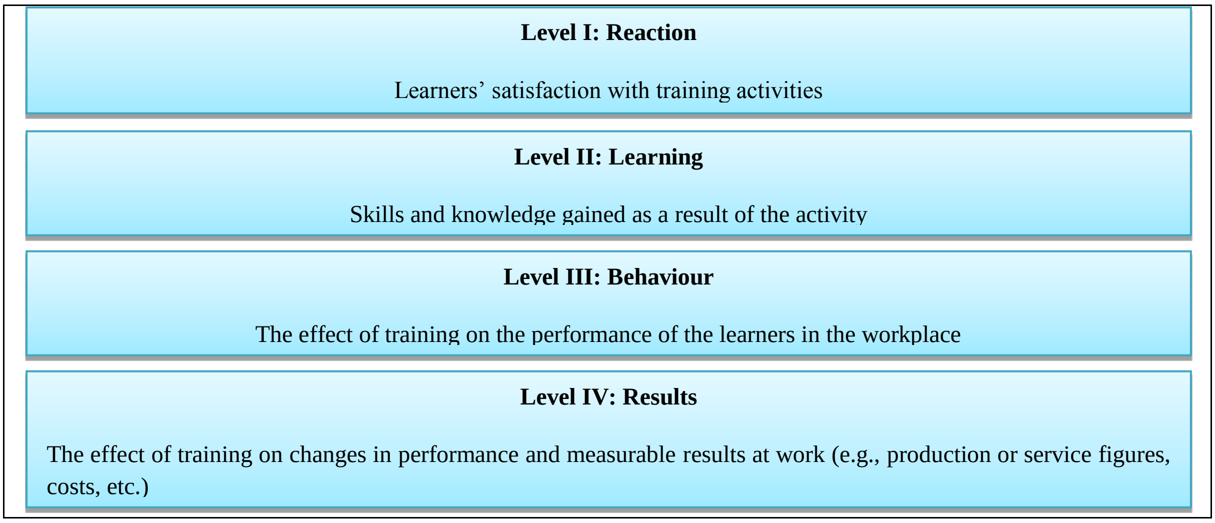


Figure 2.1 Kirkpatrick's four levels training evaluation model

Source: (Adapted from Devins and Smith, 2013, p. 188).

The original idea of Kirkpatrick's model and its related methodology were developed in 1959, since then, it has become well established within the training and development profession (Homklin et al., 2013; Saks and Burke, 2012). Kirkpatrick proposed (1959, 1976; 1994, 1996, 1998) four levels for this model: reaction, learning, behaviour and results (Table 2.4). The outcome of Kirkpatrick's approach is the evaluation of training effectiveness (Alliger and Janak, 1989). At the first level, reaction measures the feelings and attitudes of the participants. At the second level, learning measures the degree to which learners acquire knowledge and skills. At the third level, behaviour measures how much knowledge acquired by participants is transferred to the work environment. At the fourth level, results measure the impact of that training on the organisation (Alliger and Janak, 1989). There are discrepancies in terms of the amount of published research across these four levels, with further research required at the reaction level (Arther et al., 2003a).

Table 2.4 Krikpatrick's training evaluation model

Level	Description
Reaction	Measures participants' satisfaction and interest in the training
Learning	Assesses the extent of skills and knowledge gained
Behaviour	Measures trainees' ability to apply learned knowledge and skills in the work place
Results	Measures the effect of training on the organisation

Source: Adapted from Kirkpatrick and Kirkpatrick (2006, p. 21)

It is worth noting that Kirkpatrick's four-level model has gained immense significance in terms of achieving greater results and effectiveness for training evaluation (Kirkpatrick and Kirkpatrick (2006). For example, most public and private organisations in Kuwait (95%) use Kirkpatrick's four-level model while a small number (5%) used another training evaluation model (Al-Athari and Zairi, 2002). The following subsection describes criticisms of Kirkpatrick's four-level model.

2.7. 1 Criticism of Kirkpatrick's four-level model

The model has been criticised for its incompleteness, the assumption of causality and the assumption of the increasing importance of information as the four levels of Kirkpatrick's training evaluation model are ascended (Bates, 2004). Bates (2007) and Guerci et al., (2010) argue that Kirkpatrick's model provides a reductive view of training effectiveness that oversimplifies the complex process of training evaluation. They also point out that it does not consider the effect of the individual or the organisation on training evaluation. Despite these criticisms (e.g., see Bates, 2004; Holton, 1996; Hung, 2010), it can be argued that this model is the most widely accepted by academics (Phillips, 1996) and is commonly used by organisations (Bates, 2004).

In terms of incompleteness, the model does not take into account the influence of the individual or context in training effectiveness (Bates, 2004). The effectiveness of training is affected by organisations and individuals, as well as by training design and delivery factors before, during and after training (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001). In this study training design and delivery factors are termed as training characteristics. It is also assumed that it is not necessary to explore these factors when evaluating the effectiveness of training using Kirkpatrick's model (Bates, 2004).

Moreover, this model does not take into account the influence of intention to transfer learning that guides learner behaviour in the workplace. Clemenz (2001) suggests that intention to transfer learning is the link between level 1"reaction" and level 3 "behaviour" in Kirkpatrick's model. Foxon (1993) proposes that the transfer of training process starts with the learner's intention to transfer learning. The intention to transfer learning is defined as 'the trainees' intention to engage in specific behaviour that would facilitate transfer of their skills' (Bansal and Thakur, 2013, p. 56). According to Ajzen and Fishbein (1977), intent is an immediate antecedent of an action or behaviour. Thus, Ajzen (1991) explains that intent to act must exist before behaviour occurs. Consequently, trainees are likely to form an intention to behave in a certain way after their training is complete (Yamkovenko and Holton, 2010).

Second, Kirkpatrick (1994) suggests that there is a causal relationship between the four levels because positive reactions lead to learning, learning leads to desired behaviour changes in the workplace, and so on (Alliger and Janak, 1989; Bates, 2004; Kirkpatrick and Kirkpatrick, 2006). Thus, the lower levels of Kirkpatrick's model must be evaluated first to gain useful results from the evaluation (Alliger and Janak, 1989). Reaction has to be evaluated first because positive reactions to a training programme may encourage employees to attend future programmes and negative reactions may discourage learners from attending and/or completing the programme (Reio et al., 2017). In other words, it is impossible to get a good evaluation at the top levels of the model unless the lower levels are measured first. Each of the four outcomes of evaluation provide different types of information about training that will be more or less beneficial depending on the purpose of the evaluation (Stewart and Brown, 2011).

Third, according to Alliger and Janak (1989), Kirkpatrick's model assumes that each of the subsequent levels provides more useful information about the training programme than the previous level. The four levels are organised in ascending order and the model is hierarchical in nature (Reio et al., 2017). Thus, it is erroneous to bypass Level 1 (reaction) and Level 2 (learning) and only evaluate

Level 3 (behaviour) and Level 4 (results) (Kirkpatrick and Kirkpatrick, 2006). The incremental significance of knowledge is one of the reasons why Kirkpatrick's model is criticised (Bates, 2007). Nevertheless, research and empirical results do not provide enough evidence to support the assumption that each of the subsequent level provides more useful data than the one that preceded it (Bates, 2004).

These criticisms have resulted in a continuous improvement of Kirkpatrick's four-level model because of pressure in organisations to measure their investments in training, to overcome difficulties in training evaluations and gain more benefits from the application of training. Further, the gaps in the model have subject to contention conceptual and empirical review in academic was. Indira (2008) finds that past studies on training evaluation have used training evaluation models that were developed from Kirkpatrick's model, criticisms of the model helped to expand the model and develop new frameworks for training evaluation. The limitations of Kirkpatrick's model were overcome by adding levels and ensuring that causal relationships would make the model more appropriate for the time in which it was developed (Giangreco et al., 2009). The following section describes these newly developed frameworks.

2.8 Other models of training evaluation

Based on criticisms of the Kirkpatrick model, various other models have been developed (see, Brinkerhoff, 1987, 2003 ; Bushnell, 1990; Hamblin, 1974; Holton, 1996; Kaufman et al., 1996; Kraiger et al.,1993; Phillips,1996; Stufflebeam,1983; Warr et al.,1970). Those models are discussed next.

2.8.1 Kaufman and Keller's five levels of evaluation

Kirkpatrick's four-level model fails to incorporate the effect of training on society (Stokking, 1996). It is criticised as being incomplete and leading to a narrow focus on the evaluation of training alone (Watkins et al., 1998). Kaufman and Keller (1994) propose an extended version of Kirkpatrick's model, which includes value added to society and continued improvement, rather than a summative measurement (Watkins et al., 1998). This model expands Kirkpatrick's four levels by increasing the scope of the level of reaction to include enabling and reaction (input-process) and by adding a fifth level that measures societal outcomes and the impact of training on society (Russ-Eft et al., 1997). Kaufman et al., (1996) argue that applying levels of evaluation outside of training allows other performance improvement interventions to be considered. Therefore, this model considers the internal and external results of training, which are linked to performance and organisational development (Passmore and Velez, 2012). Kaufman and Keller (1994) argue that Kirkpatrick's four-level model diminishes the effect of training on society and, thus, the value and worth of resources and methods. According to Russ-Eft et al., (1997) and Kaufman et al. (1996), the evaluation of societal outcomes and the expansion of the reaction level in Kirkpatrick's model determine whether trainees are satisfied with the training resources and methods used as well as whether useful training results are achieved, and whether the contributions of training to society are worthwhile.

Kaufman's levels of evaluation training model consists of five levels: (1) enabling and reaction as also is termed as (input and process), (2) acquisition, (3) application, (4) organisational output and (5) societal outcomes. At Level 1, the definition of reaction is expanded to be enabling and reaction (input and process), and there is a separation between input, which concerns the quality of the available organisational resources, and the acceptability and efficiency of the methods and resources used in a process (Kaufman et al., 1996; Watkins et al., 1998). Watkins et al., (1998) argue that this separation of input and process at Level 1 is highly useful for evaluators by providing managers and decision makers with valuable information that is required to continuously improve organisational training and education efforts. Level 2 is termed as "acquisition" measures and acquisition of competencies, Level 3 is the application of learned skills in the workplace and Level 4 is termed as organisational output, measuring the output or contributions of the organisation. Finally, Level 5 measures societal issues by evaluating society and client responsiveness, consequences and payoffs (Jamjoom and Al-Mudimigh, 2011; Kaufman et al., 1996).

On the other hand, Stokking (1996) argues that some of the aspects in the extended version of Kirkpatrick's model are vague and suffer from a lack of clarity, and that the model needs further adjustments. For instance, there are differences between the desired chronology of activities and the aspects of levels and importance or no clear distinction is made regarding the implementation condition of training. In this model, implementation and learning objectivities and their achievements are incorporated into Level 2 (acquisition) because they are viewed as indicators of the effectiveness of training and proper course implementation (Stokking, 1996). Furthermore, Kaufman's model has a theoretical side, but it offers less in the area of practical application (Topno, 2012). Therefore, this model provides the same amount of information as Kirkpatrick's four-level model because it does not take into account contextual factors.

2.8.2 The Phillips return on investment model

Kirkpatrick's four-level model fails to measure the economic value of a training programme or its benefits. Therefore, Phillips (1996) developed a way to measure the contributions of training by adding a fifth level to Kirkpatrick's four levels called 'return on investment' (ROI) and expanding Level 1 to include trainees' intentions to apply knowledge from the training programme to their workplaces. According to Phillips (1996), return on investment refers to "a ratio based in the monetary benefits in relation to the costs of the training" (McKenna and Beech, 2014, p. 377).

Phillips (2005) argues that the ROI level provides worthwhile data and solid proof of payback for training expenditures by showing the monetary benefits of training through cost-benefit analyses (Lockwood, 2001; Chang, 2010). However, return on investment is difficult to measure (Watkins et al., 1998). Russ-Eft and Preskill (2005) argue that defining return on investment is a multifaceted and complex task within a complex system. The process of calculating return on investment is more subjective than objective measurement and has not produced accurate measurements of training investments. This is net benefits of training are enmeshed with other organisational system variables and are hard to separate, despite the fact that calculated total training costs are easily attainable (Wang and Wilcox, 2006).

2.8.3 Warr et al' s context, input, reaction and outcome model

Kirkpatrick's four-level model fails to measure context and input before conducting training activities. Therefore, Warr et al., (1970) propose the context, input, reaction and outcome (CIRO) model for evaluating managerial training. The context, input, reaction and outcome model analyses the context and possible input levels before measuring the reaction level (Brewer, 2007, Tamkin et al., 2002).

The context level involves looking at the current operational situation to help determine the training needs and objectives. Input level involves information about possible training methods or techniques that can be used to select the best training intervention (Brewer, 2007). The reaction level in this model is similar to that of Kirkpatrick's model; however, it puts greater emphasis on suggestions to help change the training programme's concern with participant views and suggestions. The outcome level looks at the results of the training and involves immediate, intermediate and ultimate outcomes that are similar to Kirkpatrick's levels of learning, behaviour and end results (Brewer, 2007; Phillips, 2003; Tamkin et al., 2002).

Although, this model emphasises the objectives and availability of resources, it does not show how to conduct these measurements (Tzeng et al., 2007). It is conducted before and after the training intervention (Tennant et al., 2002). Furthermore, the ultimate outcome evaluation does not always need to be used, as suggested by Warr et al. (1970), while the current trend in the human resources development field calls for evaluation at the results level (Chang, 2010). This model needs further development in order to be effective.

2.8.4 Stufflebeam's context, input, process and product model

Kirkpatrick's four-level model has little concern for the objectives, design, implementation and outcomes of the programme. Stufflebeam (1983) describes the context, input, process and product (CIPP) model as helpful for problem solving and implementing training. The context, input, process and product model has some of the same features as the context, input, reaction and outcome (CIRO) model (Roark et al., 2006), which was discussed above. In the context stage, the measureable programme objectives are identified in order to determine if they are acceptable to organisations, society and culture, and to determine their significance. The input stage is concerned with assessing the programme's content and the material used in the programme. The process stage is concerned with the application of the programme, and the input stage is concerned with planning. Finally, the product phase measures the agreement of the programme's results with its intended objectives (Brewer, 2007; Chang, 2010). Thus, multiple data collection methods are usually required to do a good evaluation study using the context, input, process and product model, and each data set must be analysed using methods that are appropriate to the data and the evaluation questions being addressed (Frye and Hemmer, 2012).

This framework allows evaluators to create questions for any programme (Hakan and Seval, 2011), making it a formative and summative evaluation that can be used in instructional processes (Harrison, 1993). Nevertheless, this model does not support evaluators because they are unable to respond to specific questions or issues (Zhang et al., 2011). These shortcomings gave rise to the development of other training evaluation models.

2.8.5 Brinkerhoff's Six-Stage Model

The Kirkpatrick model has been criticised for failure to take account of the need to assess training needs prior to training and to feed this into training design, therefore; Brinkerhoff (1987) developed the six-stages evaluation model namely 1) goal setting, 2) programme design, 3) programme implementation, 4) Immediate outcomes, 5) intermediate or usage outcomes and 6) impacts and worth. Brinkerhoff's model is similar to Kirkpatrick's model (Bomberger, 2003; Phillips, 2003) but Brinkerhoff's model (1987) added two preliminary steps to Kirkpatrick's model to provide formative assessment of training needs and training design (Holton and Naquin, 2005).

In Brinkerhoff's model, stage 3 is similar to level 1 "reaction" of Kirkpatrick's model, and stage 4 is similar to level 2 "learning" of Kirkpatrick's model, (Change, 2010). Stage five measures the transfer of learning to the workplace, and stage six measures the programme's value to the organisation (Change, 2010; Kumpikaite, 2007), which are the same as in level 3 behaviour and level 4 results in Kirkpatrick's four level model. Also, all these six stages overlap in this model, as they are sequential and one level cannot be completed unless the previous one is completed.

Nevertheless, this model is only ideal for the situations where the employer and the training organisers are able to work closely together, as it needs to be conducted before and after training

(Passmore and Velez, 2012). Also it is ideal for situations where the evaluation design has occurred during the training process because stages 1(goal setting) and 2 (programme design) of this model are part of the training process, and for situations where there is no pressure to reduce the budget or to meet deadlines (Holton and Naquin, 2005; Passmore and Velez, 2012).

2.8.6 Bushnell's input, process, output model

While Kirkpatrick's model should be done immediately the after training event , Bushnell (1990) proposes a training evaluation model that can be conducted before and after training that is both formative and summative in nature (Bomberger, 2003). Bushnell (1990) developed the input, process, output (IPO) model, which is a system-based approach that focuses on the entire training process. Furthermore, while Kirkpatrick's model fails to measure financial results over the long term, Bushnell's (1990) model measures the results of evaluation over the long term, such as profit, improvement in competition and survival of the business. This model shows the value of training in financial terms, such as profitability, customer satisfaction, productivity and so on (Chang, 2010). It helps to identify if a training programme's objectives were met, if further changes are required to improve the programme and if the trainees acquired the necessary knowledge and skills (Bushnell, 1990; Galvin, 1983; Phillips, 2000).

The input, process, output model combines the first three elements of Kirkpatrick's four-level model, reaction, learning and behaviour, and Brinkerhoff's six-stage model (1987), namely, evaluation of needs and objectives; (2) evaluation of design; (3) evaluation of operation; (4) evaluation of learning; (5) evaluation of usage and endurance of learning; and (6) evaluation of pay-off (Chang, 2010). According to Bushnell (1990), evaluation has to take place in each stage of the training system and contains elements of input, process and output. Each of these elements involves measurable factors. The input stage assesses how inputs, such as learners' qualifications, programme design, trainers' qualifications and ability, quality of materials, facilities and equipment, contribute to the effectiveness of training intervention (Passmore and Vele, 2012). The process stage includes the evaluation of the development process of the plan, design, development and delivery of the programme (Jain, 2014). The output stage assesses the trainees' reactions, knowledge, newly acquired skills and improved job performance (Bushnell, 1990). The output stage comprises the first three levels of Kirkpatrick's model, namely, reaction, learning and behaviour (Jain, 2014). Output is defined as short-term results or impact of training (Bushnell, 1990; Jain, 2014). The outcome stage includes the long-term results of training, which are associated with organisational improvements, such as profits, customer satisfaction and productivity (Bushnell, 1990; Jain, 2014).

This model does not provide sufficient information related to programme function and does not account into account to the specific factors that influence these results (Passmore and Velez, 2012). Based on the proposed criticisms, no impact or effect has been observed based on this model (Robertson, 2004). Furthermore, this model is largely theoretical and has few practical applications (Topon, 2012).

2.8.7 The learning outcomes of Kraiger, Ford and Salas's model

Kirkpatrick's four-level model lacks the ability to offer reliable measurements at the levels of behaviour and results (Patterson and Hobley, 2003). Kraiger et al., (1993) propose that training evaluation consists of three learning outcomes: cognitive, skill-based and affective outcomes. The cognitive outcome is based on the evaluation of knowledge (verbal or declarative knowledge and knowledge of the organisation) and effective cognitive strategies. Cognition is defined as a set of variables related to the quantity and type of knowledge and the relationship between knowledge elements (Kraiger et al., 1993). Skill-based outcomes are based on the measurement of task proficiency, while affective outcomes are based on evaluating the increase in motivation (Patterson, 2003). These three learning outcomes relate to training goals, process strategies and performance criteria (Tamkin et al., 2002). Ellis et al. (2005) argue that the effectiveness of a training intervention is determined by gaining critical knowledge and the effective transfer of that knowledge to a work setting. The first two outcomes are similar to Kirkpatrick's first two levels, namely, reaction and learning. However, in the Kraiger et al. model, these levels are not considered hierarchical, meaning one level does not lead to the next (Patterson and Hobley, 2003).

Kraiger et al., (1993) believe that the measurement of knowledge gained from a training intervention is achieved by administering a test after the training programme; however, this test may be inadequate to measure acquired learning. For example, some individuals have the ability to memorise information and do well on exams, but they cannot apply what they have learned. Kraiger et al., (1993) suggest that the measurement of verbal knowledge may enable evaluators to differentiate between learners at higher levels on the cognitive spectrum.

This model helps to identify situational and individual factors that predict the application of training and learning (Patterson and Hobley, 2003). Cognitive outcomes include verbal knowledge organisation and cognitive strategies. Skill-based outcomes consist of skill compilation and automaticity. Affective outcomes contain attitudinal outcomes and motivational outcomes include disposition, self-efficacy and goal setting (Kraiger et al., 1993).

Although there are advantages to this model, it offers no guidance for determining the financial value or cost effectiveness of training. It also emphasises the effects of training on the individual course attendee and neglects the effects of training on the organisation, while underplaying possible delays between training and on-the-job performance improvement. Finally, it provides little opportunity to collect and incorporate the subjective views of trainees (or trainers) into the evaluation (Beech and Leather, 2006).

2.8.8 Holton's HRD evaluation and research model

Kirkpatrick's four levels fail to take into account of factors on each level of evaluation. Therefore, Holton (1996) proposed the human resources development (HRD) evaluation and research model, which consists of three primary training outcomes, namely, learning, individual performance and organisational results. The three outcomes of this model are similar to Levels 2, 3 and 4 in Kirkpatrick's model. The difference is the missing outcome of reaction (Holton, 1996; 2005), as Holton (1996) argues that reaction should not be considered a primary outcome of training.

Holton (1996) suggests that a complex system of factors influence training outcomes, which are not taken into account in Kirkpatrick's four levels. Holton (1996) considers the influence of factors in only three training outcomes, namely, learning, individual performance and organisational results. This model ignores the influence of factors on the reaction level, which is the first level in Kirkpatrick's model. Instead, Holton's model is based on the hypothesis of trainability and the primary variables that affect this are ability, motivation and perceptions of the work environment (Noe, 1986). The primary moderating or mediating factors affecting learning outcomes are trainee reaction, motivation to learn, and ability to learn or cognitive ability. The primary moderating or mediating factors influencing individual performance outcomes are motivation to transfer knowledge, transfer conditions within the organisation and transfer design. Finally, the primary moderating or mediating factors influencing organisational results include links between the training and organisational goals, expected utility or payoff, and external events (Antos and Brueningm, 2006).

Nevertheless, Holton (2005) states that tools to assess variables in the Holton's model (1996) did not exist. The tests constructed in these models are limited because of the shortage of effective measurement methods. This model is criticised for giving only a description of the order of influences on outcomes that happen in a single learning experience, but it does not consider feedback loops (Karan and Birchall, 2006). In the same vein, Holton (1996) states that this model only explains a sequence of effects on the outcomes of individual learning and does not validate any feedback loops (Kirwan and Birchall, 2006). The identification of specific variables should be measured within each of the conceptual constructs, as identified by Holton (1996, 2005). Moreover, this model is used infrequently because it can complicate the evaluation process to the point where practitioners neither have the money nor the time to conduct extensive evaluations (Antos and Brueningm, 2006). Thus, there is a need for a more integrative and testable model (Holton, 1996).

2.8.9 Brinkerhoff 's success case method

Kirkpatrick's model assumes that performance results can be achieved through training alone and fails to consider how multiple variables contribute to the impact of a learning opportunity (Brinkerhoff, 2005). According to Brinkerhoff (2003), the success case method (SCM) is a way to evaluate the business impact of training that is aligned with and fulfils a deliberated strategy (Brinkerhoff, 2005). The successful case study process involves two fundamental parts (Brinkerhoff and Dressler, 2003). The first part involves participants who are the most successful and participants who are the least successful at applying learned knowledge and skills from the training programme. The second part of the success case method draws a sample from the most and least successful cases (Brewer, 2007).

The success case method analyses the effectiveness of training programmes using qualitative and quantitative methods. All stakeholders can benefit from using this approach because it provides valuable information about the manner of using new information , the positive outcome of a new intervention or adjustment, the recognition of divisions within an organisation that use new techniques and their success with using these tools, return on investment estimation, support of decisions made regarding certain values provided by intervention and offering data about the current impact of the training programme (Brinkerhoff (2005). In this regard, Brinkerhoff (2005) asserts that this method is a worthwhile application of training that results in desired consequences worth significantly more than the training cost.

Although it has certain merits, this model needs more guidance about what training experts and instructors define as important success factors related to a particular type of work because the difficulties that trainees face when back at their workstations may not be identified in this model (Casey, 2006). The following section discusses the justification for adopting Kirkpatrick's model in this study

2.8.10 Justification for adopting Kirkpatrick's model

Kirkpatrick's four-level model was adopted for this research for several reasons. This framework is the most accepted model for evaluating training effectiveness (Al Yahya and Mat, 2013; Guerci et al., 2010; Homklin et al., 2014). Its simplicity and basic approach have made it the most commonly used methods in the field of training evaluation (Sachdeva, 2014). Furthermore, it is the foundation of most training evaluation models, which either directly or indirectly build on Kirkpatrick's four-level model (Russ-Eft and Preskill, 2009). Kirkpatrick's four-level model has been criticised, as discussed above, but most models face similar challenges and require further development.

Therefore, this study aims evaluate the impact of training characteristics on training effectiveness as a key element of training evaluation. The following section will provide a clear explanation of four-levels of Kirkpatrick's model training evaluation (reaction, learning, behaviour and results).

2.9 Measuring training effectiveness

Although the evaluation of training effectiveness is a critical aspect of training and development, the proper selection of evaluation criteria is essential for determining how successful the training programme will be. The following subsections discuss training evaluation criteria (i.e., the four levels of Kirkpatrick model) to determine training effectiveness.

2.9.1 Reaction level

Reaction can be defined by either a single dimension (i.e., the trainee's satisfaction with the training) (Diamantidis and Chatzoglou, 2012) or a multi-dimensional construct such as enjoyment, utility ,affection and difficulty , (e.g. Alliger et al., 1997; Warr et al., 1999; Tracey et al., 2001; Tan et al., 2003). Harrison (1992), Warr and Bunce (1995) and Warr et al., (1999) suggest that reactions include enjoyment, utility and difficulty dimensions. Furthermore, Alliger et al. (1997) propose that reaction includes utility perceptions and affective reactions. Arthur et al., (2003a) state that Level 1 (reaction) of Kirkpatrick's model represents the affective and attitudinal responses of learners to instructional programmes. Most research study the trainee reaction construct for assessing the reactions of trainees' level are multi-dimensional constructs (Brown, 2005, 2007). The current study of research uses reaction as a multi-dimensional construct, as suggested by Brown (2005). Table 2.5 summarises the trainee reaction dimensions discussed in the extant literature.

Table 2.5 Dimensions of trainee reaction

Dimensions	Source/s
Satisfaction only (liking of training)	Alliger and Janak (1989); Giangreco et al., (2010); Iqpal et al., (2011); Kirkpatrick, (1994); Noe (1986); Ghosh et al., (2011); Lin et al., (2011).
Enjoyment, utility (the extent to which the participants can apply the content to their job) and difficulty	Alliger and Janak (1989); Harrison (1992); Giangreco et al., (2010); Warr and Bunce (1995), Warr et al., (1999).
Utility and affective (the extent to which a participant "liked" or was satisfied with different aspects of the training) reactions	Alliger and Janak (1989); Alliger et al., (1997); Arthur et al., (2003a); Morgan and Casper (2000), Tracey et al., (2001), Sitzmann et al., (2003), Tan et al., (2003).
Overall satisfaction (The perceived efficiency (effectiveness) and usefulness of training, and	Giangreco et al., (2009), Giangreco et al., (2010).

the perceived trainer performance)	
Satisfaction and ease of use	Kettanurak et al., (2001); Giangreco et al., (2010).
Utility only	Bhatti and Kaur (2010).

Asking participants about certain aspects of the training can be beneficial for identifying problems and measurement of satisfaction with the training is useful for detecting motivation or diagnosing problems with trainees (Brown, 2007). Morgan and Casper (2000) add six distinct factors when measuring reaction. According to Brown (2005, 2007), reaction can measure one dimension, such as satisfaction, or multiple dimensions, such as training content, materials, delivery methods, trainer, instructional activities, timing, evaluation and improvements. In the same vein, trainee reaction reveals the trainee's perception of participating in a training programme by measuring elements of the training programme, such as trainer performance, training environment and training components, goals, content, material, process, and design and delivery, in order to redesign and develop an instructional programme (Diamantidis and Chatzoglou, 2012; Sitzmann et al., 2008; Saks and Burke, 2012).

The trainee's initial response is critical for the rest of the training and represents three elements: expectations, desire and perception (Tannenbaum et al., 1991). Patrick (1992) argues that trainees' motivation and feelings towards training have a critical influence on their level of success in the training programme. Reaction is another kind of feedback related to training (Tannenbaum and Woods, 1992; Mann and Robertson, 1996; Blanchard et al., 2000). The evaluation of reaction is simply the extent to which trainees like or dislike a training programme. Therefore, evaluators assess the reactions of learners for several reasons that are described in detail below (Kirkpatrick and Kirkpatrick, 2006; Morgan and Casper, 2000).

2.9.1.1 Receiving valuable feedback

Receiving feedback about a training programme supports trainers to do their work better and demonstrate the effectiveness of their training programme. The strength of measuring reaction lies in getting feedback from the trainee and judging the effectiveness of a training programme so that the trainer can recognise what the trainee needs from the training programme (Kirkpatrick and Kirkpatrick, 2006). Thus, by analysing the results of the feedback, the trainer can adjust the programme as required and the results can be shared with the organisation (Mavin and Robson, 2010). Trainee reactions provide quick valuable feedback about how well the training was delivered (Lee and Pershing, 2002; Mavin and Robson, 2010; Turner et al., 2017). Hence, the trainer can get a quick understanding of how the learners felt about the training session in terms of the content, structure and how it was delivered (Mavin and Robson, 2010).

2.9.1.2 Improving the training programme in the future

Trainee reaction can provide substantive input for the design and improvement of training efforts (Morgan and Casper, 2000). According to Tannenbaum and Woods (1992), Mann and Robertson (1996) and Goldstein and Ford (2002), measuring reactions to training helps organisations improve future training programmes by recognising the weaknesses of the current training. Quantitative information provided by trainee reaction is useful to set the standards for the performance of future training programmes (Kirkpatrick and Kirkpatrick, 2006).

2.9.1.3 Predicting training outcomes

Trainee reaction can provide valuable information for a variety of training outcomes (Turner et al., 2017), such as learning, behaviour and results. Participant reactions can be predictors of more costly criteria of training effectiveness, such as learning, behavioural change and results for the organisation (Alliger et al., 1997; Morgan and Casper, 2000). Tan et al., (2003) find that negative evaluations significantly predict employee learning. Ruona et al. (2002) show that participant utility reactions are correlated with transfer of learning factors, such as motivation to transfer learning and effort to transfer learning. Lin et al., (2011) find that reactions to training have direct and positive effects on learning and behaviour.

Although reaction can provide valuable information about a training programme, it should not be used solely as an indicator of training evaluation to determine its effectiveness (Alliger and Janak, 1989; Alliger et al., 1997; Arthur et al., 2003a; Steele et al., 2016). Arthur et al., (2003a) show that reaction represents a trainee's feeling about the training programme and whether they liked the course. Evaluating reaction criteria is the only the important level of Kirkpatrick's model to measure training effectiveness (Tannenbaum and Yukl, 1992; Velada and Caetano 2007). This level only describes the participant's impressions and feelings about the training programme (Jeng and Hsu, 2005; Rajeev et al., 2009), as well as their judgments and understanding of the training elements, such as the content, material, instructors and training environment. Steensma and Groeneveld (2010) believe this is a problem because while measurement of participants' satisfaction with the training is significant, it is not enough to determine whether there is a positive relationship between acquiring knowledge and improving job performance.

Kirkpatrick's original work was unclear about what types of questions should be asked about reaction and how this concept should be used (Brown, 2007). Reaction is expanding into a multidimensional concept (Brown, 2007; Morgan and Casper, 2000; Warr and Bunce, 1995; Warr et al., 1999). Morgan and Casper (2000) and Tan et al., (2003) also find that reaction is multidimensional in nature. Lee and Pershing (1999) propose up to 11 reaction dimensions, including reactions towards the training delivery methods and training environment. Therefore, this study also conceptualises trainee reaction as a multidimensional concept.

Since trainee reaction give information that is of limited value to the trainer, it is essential to use other levels to measure the effectiveness of training programmes. Trainee reaction generally produces information that is of limited value to the trainer (Lee and Pershing, 2002). It is essential to measure learning and involve the other levels and assume that there is a relationship between them by taking into account how some factors related to training may influence those relationships. In the same vein, Bramley and Kitson (1994) contend that all evaluation levels (reaction, learning, behaviour and results) should be analysed because each level provides a different kind of evidence and outcome. Therefore, analysing all four levels is necessary to meet individual and organisational needs and objectives.

Credible reaction data can be helpful diagnostic tool for designing and delivering training (Morgan and Casper, 2000). Trainee reactions provide insights about participants' degrees of satisfaction with the training design and implementation (Lee and Pershing, 1999; Lee and Pershing, 2002). Trainee reaction focuses on how trainees feel about the training programme overall, its content, methods and skills of the instructor or facilitator (Kusy, 1988). The training objectives, methods, environment, trainer and training content are important factors related to designing a training programme (Nikandrou et al., 2009). Therefore, the evaluation of trainee reaction requires participants to comment on these factors (Kirkpatrick, 1959; Kirkpatrick and Kirkpatrick, 2006, Lee and Pershing, 1999). Thus, this study aims to investigate the impact of training characteristics on Level 1 "reaction" of Kirkpatrick's model.

2.9.2 Learning level

Learning is defined as "the extent to which the learners gain knowledge and skills" (Kunche et al., 2011, p. 3). Learning is one of the potential training outcomes investigated in training research. Level 2 (learning) Kirkpatrick's model measures the extent to which knowledge and skills are gained (Rajeev et al., 2009). In the same vein, Saks and Burke (2012) state that evaluating learning reveals whether the supervisor should adjust the training context or teaching techniques. In other words, this level seeks to identify the results of a training programme. Hence, in order to evaluate learning, it is necessary to ensure that new knowledge, attitudes or skills have been acquired (Kirkpatrick and Kirkpatrick, 2006).

As argued by Kirkpatrick (1996), the aim of Level 2 is to help trainees reflect on the skills and knowledge they gained from the training. Whereas, learning helps to identify whether a training programme was successful, it does not offer data about the effects of the training on the organisation or whether the organisation supports the application of new knowledge or skills. In other words, Level 2 (learning) evaluates the outcome of learning but not job related-performance (Arthur.et al., 2003a). In support of this view, Tannenbaum and Yukl (1992) note that learning criteria are not useful for measuring changes in behaviour. Thus, if learning is assessed separately from other levels, it will not offer feedback about whether learners were satisfied with training, nor will it determine if the learning was transferred to the workplace or if it affected the organisation (Kirkpatrick and Kirkpatrick, 2006).

Although Level 2 provides useful information about the advancement of knowledge, skills and attitudes after a training programme (Tamkin et al., 2002), it is costly to plan and execute (Morgan and Casper, 2000). It requires more time and money than Level 1 and requires greater insight into the evaluation process to develop valid measures of learning (Adgate et al., 1999). Thus, well designed and delivered training programmes may reduce the effort and time necessary to conduct training evaluations at Level 2.

Learning is a function of the content, methods and processes used during a training programme (Tannenbaum, 1993). Level 2 aims to understand the learner's comprehension of instructions, principles, ideas, knowledge and skills (Lin et al., 2011). On the other hand, several environmental and situational factors can affect trainee learning (Turner et al., 2017). Thus, trainers who are most knowledgeable about the training environment and trainees' reactions are responsible for how they administer and deliver the course objectives and whether or not trainees acquire the necessary amounts of knowledge during training (Adgate et al., 1999). This study also aims to investigate the impact of training characteristics on Level 2.

Kraiger et al., (1993) propose three dimensions of learning outcomes, including cognitive, skill-based and affective learning outcomes. Cognitive learning refers to the cognitive acquisition of knowledge (Alvarez et al., 2004), skill-based learning outcomes refer to the development of technical or motor skills and, affective or attitudinal learning refers to a class of variables that encompass issues, such as attitude, motivation and goals that are related to training programme objectives (Kraiger et al., 1993). Learning is measured during training to reveal attitude, cognitive and behavioural learning outcomes (Alvarez et al., 2004). Furthermore Alliger et al. (1997) organise multi-dimensional learning outcomes in three categories: immediate knowledge, knowledge retention and behaviour/skill demonstration. Immediate knowledge evaluates trainees' knowledge, knowledge retention evaluates trainees' knowledge after a significant amount of time has passed since the training and behaviour/skill demonstration indicates behavioural proficiency within the training (Alliger et al., 1997). Therefore, measuring Level 2 provides trainees with the opportunity to assess their learning and identify how they believe their behaviours might change (Mavin and Robson, 2010).

Evaluating learning is critical to evaluating other training evaluation levels because without learning, no behavioural change will occur (Kirkpatrick and Kirkpatrick, 2006). Velada et al., (2007) indicate that the more training content is retained, the more knowledge will be transferred to the workplace. Furthermore, Diamantidis and Chatzoglou (2012) and Homklin et al. (2014) find that learning significantly influences behavioural change.

Evaluating training at the reaction and learning levels will help to identify training requirements and objectives based on the context of the organisations and determine improvements in the knowledge, skills and attitudes of participants (Kirkpatrick and Kirkpatrick, 2006). In addition, measuring behaviour and results helps to determine if learning has been transferred to the workplace and if performance has improved.

2.9.3 Behaviour level

Behaviour is defined as the 'capability to perform the learned skills while on the job' (Kunche et al., 2011, p. 3). "Transfer of knowledge" is sometime used in lieu of 'behaviour' (Olagunju, 2014). In other words, behaviour is measured by determining if the trainees implemented their newly learned tasks in the workplace. Saks and Burke (2012) state that evaluating behaviour can show if changes happened or if further training is required to enhance development.

Measuring behaviour also provides a greater amount of qualitative information about the effectiveness of training compared to data collected at the results level, which tends to be quantitative information and is measured by a supervisor's rating or other objective indicators of performance (Arthur .et al., 2003a). Management can measure changes or improvements in trainees' skills, competence, abilities and relationships by distributing surveys, observing performance, giving performance reviews and listening to comments from the employees' bosses and or colleagues(Rouse, 2011, Kirkpatrick and Kirkpatrick, 2006). Level 3, focuses on measuring the use of trained knowledge and skills back on the job (Burke and Hutchins, 2007) in order to determine the success of a training programme (Velada and Caetano 2007). Thus, Level 3 can be conducted before, during and after training (Burke and Hutchins, 2008).

In practice, there are several reasons to measure behaviour. First, the training objectives and the needs of participants are met if changes in behaviour and progress can be observed. Attia et al., (2013) add that this level is the only one that supports the goals and objectives of the organisation. When designing a training and development programme, the objectives, needs and results need to be clear, and these form the basis of the evaluation. Second, behaviour measures improvement in job performance, which shows the effect of training on employee performance. In other words, the effectiveness of a training programme can be observed through how much knowledge is transferred to the workplace (Arthur et al., 2003a). Level 3 can reveal problems in a training programme and identify the support that the organisation should provide for the training (Kirkpatrick and Kirkpatrick, 2006).

Although there are advantages to measuring behavioural change, it requires more time and money (Morgan and Casper, 2000), and it requires deep insight into performance interventions and the causes of performance deficiencies (Adgate et al., 1999). Further, time pressures or inadequate equipment, lack of peer support and lack of management support are other obstacles that prevent the transfer of knowledge to the workplace (Long, 2005). As a result, behaviour is measured less frequently than reaction and learning.

This study aims to investigate the impact of training characteristics on behaviour. Training characteristics play a critical role in the transfer of learning. The methods used, the variety of training stimuli, which is associated with the usage of different instructional methods, as well as the interactions between trainees and the trainer create the proper learning environment and play a defining role in the transfer of knowledge (Nikandrou et al., 2009). Moreover, if the behaviour level is evaluated separately from other levels, it cannot offer information about trainee satisfaction, does not guarantee that learning occurred, and cannot expect organisational results (Change, 2010; Kirkpatrick and Kirkpatrick, 2006).

2.9.4 Results level

Results are defined as “the effect on the business or environment resulting from the improved performance of the trainee” (Topno, 2012, p. 20). Measuring results, which is Level 4 in Kirkpatrick’s model, is necessary to determine the efficiency of training and development programmes as well as to measure the impact of training on organisations and to measure training effectiveness through objective measures, such as sales per trainee (Phillips, 1991). This level defines the final results of a training programme, such as increased production, upgraded quality, reduced costs, decreased frequency and/or severity of accidents, increased sales, condensed turnover and higher profits (Kirkpatrick and Kirkpatrick, 2006, p. 37). It also measures the monetary benefits of training programmes, such as productivity and profits (Arthur et al., 2003a). Saks and Burke (2012) state that this level measures the degree to which a training programme has improved the outcome of a department or a whole organisation, such as achieving higher profits. The authors suggest that organisations offer training programmes in the work setting in order to conduct evaluations at all four levels more regularly.

It is difficult to measure the contributions of the long-term results of training programmes (Brinkerhoff, 2005; and Nickols, 2005), perhaps due to the lack of evaluation instruments at this level. Steensma and Groeneveld (2010) argue that various aspects affect the long-term results of training programmes. Furthermore, data from results evaluations are more costly to plan and collect (Morgan and Casper, 2000). Results are typically measured through utility analysis estimates (Cascio, 1991, 1998) at the end of a training programme (summative and/or confirmative evaluation). A utility analysis is defined as “a specific tool designed to estimate the institutional gain or loss anticipated to a company from various human resource interventions designed to enhance the value of the workforce” (Sturman, 2003, p. 109). A confirmative evaluation is defined as “the process of collecting, examining and interpreting data and information in order to determine the continuing competence of learner (performers) or the continuing effectiveness of the instructional materials (performance improvement intervention)” (Van Tiem et al., 2012, p. 555). Therefore, substantial levels of investment and expertise are needed to deliver Level 4 results (Adgate et al., 1999).

Furthermore, if this level is conducted separately from the other levels, it will be impossible to measure trainee satisfaction, estimate the level of learning and demonstrate the transfer of knowledge to the workplace (Kirkpatrick and Kirkpatrick, 2006). Therefore, information gathered from the other levels is used to perform measurements at this level. The following section discusses the relationship between the four levels.

2.10 Relationships between the four levels

Kirkpatrick’s model assumes there is a correlation between the four training outcomes: reaction, learning, behaviour and results (Kirkpatrick, 1996; Santos and Stuart, 2003). The levels represent a causal chain such that positive reactions lead to greater learning, which produces greater transfer of knowledge and ultimately more positive organisational results (Bates, 2004). Bramley (1996) contends that each level provides different data and evidence. Thus, analysing all four levels produces a greater amount of useful information about individual and organisational outcomes.

According to Saks and Burke (2012), previous studies have investigated the relationship between the four levels of evaluation outcomes. For example, meta-analyses by Alliger et al., (1997) and Alliger and Janak (1989) using Kirkpatrick’s framework show few studies confirm the assumption of causality between the four levels. A meta-analysis of past training evaluation research by Alliger and

Janak (1989) shows only three studies out of 203 investigated all four levels. Arthur et al., (2003a) note that past research has indeed used reaction criteria when evaluating training effectiveness; however, this only represents 15 (4%) data points compared to 234 (59%) for learning, 122 (31%) for behaviour and 26 (7%) for results within their meta-analysis of observed training effectiveness. Furthermore, discrepancies exist in terms of the amount of published research across these four levels, with further research required at the level of reactions. Similarly, Noe and Schmitt (1986) show limited support for correlations between Kirkpatrick's (1967) training outcomes, and the extant research has largely failed to support this assumption (Bates, 2004; Santos and Stuart, 2003).

2.10.1 Relationship between reaction and learning

There is a lack of evidence supporting the relationship between Level 1 (reaction) and the other three levels (learning, behaviour and results) (Kaplan and Pascoe, 1977; Noe and Schmitt, 1986; Alliger and Janak, 1989; Alliger et al., 1997; Clement 1982; Colquitt et al., 2000; Arthur et al., 2003a). According to Alliger and Janak (1989), there is no correlation between positive trainee reaction and the other three levels, i.e., between reaction and learning, reaction and behaviour, and reaction and results, but there is a minor relationship between learning and behaviour, and between behaviour and results. Clement (1982) argues that some variables influence the relationship between the four training outcomes, such as motivation, the context of knowledge transfer and trainee attitudes. Holton (1996) argues that the use of different instruments to measure trainees' reactions is the reason for the weak relationship between reaction and learning. Furthermore, the evaluator's understanding of the dimensionality of the variables is significant (Morgan and Casper 2000) when evaluating trainees' reactions (Attia et al., 2013). Some research considers reaction a multi-dimensional concept linked with learning (e.g., Alliger et al., 1997; Kettanurak et al., 2001; Tracey et al., 2001; Tan et al., 2003; Warr et al., 1999), while others view reaction as a one-dimensional construct with no relationship with learning and the other levels (e.g., Noe et al., 1986; Alliger et al., 1989).

Few studies have demonstrated a significant relationship between reaction and learning, but some researchers show that a positive relationship between reaction and learning exists (e.g. Clement, 1982; Brown, 2005; Mathieu et al., 1992; Kirkpatrick, 1996; Warr et al., 1999, reaction, 1999; Leach and Liu, 2003; Tan et al., 2003; Warr et al., 1999; Lin et al., 2011; Homklin et al., 2013). Kirkpatrick and Kirkpatrick (2006) state that reaction influences learning, while Alliger et al., (1997) reveal a significant relationship between utility judgments and immediate learning. A utility judgment is defined as "opinions from trainees on the applicability of the contents of training" (Pineda-Herrero et al, 2014, p123). Similarly, Clement (1982) states that research on personal management shows a positive link between reaction and learning. Finally, Brown (2005) finds a significant relationship between reaction and learning.

2.10.2 Relationship between learning and behaviour

A true training evaluation, as identified by Harless (1976), is the one that gauges how well the training content relates to the job and its effect on the organisation. This explanation assumes there is a relationship between Levels 3 and 4 of Kirkpatrick's model (Kennedy et al, 2014). Bramley and Kitson (1994) also propose that a training evaluation model should include Levels 3 and 4 of Kirkpatrick's. Kennedy et al., (2014) argues that organisations that want to evaluate training should spend their time measuring training outcomes in terms of how well a learned skills is applied to the workplace and how that improves the organisation.

A critical link between learning and transfer of learning has been found. For instance, Liebermann and Hoffmann (2008) show that learning has a direct influence on behavioural change. Therefore, gaining knowledge motivates individuals to perform their work tasks more effectively. Kirkpatrick (1994) notes that change in behaviour is associated with learning, which makes training more effective. In support, Maister (2008) shows that transfer of learning in the work environment is increased by the acquisition of knowledge. Maister (2008) also indicates that when more knowledge is learned from a training programme more behavioural change can be found in the workplace. Additionally, to support the transfer of learning, trainees must retain knowledge, and for skills to be applied in the work environment, they must first be learned and retained. According to Baldwin and Ford (1988), learning retention outcomes are directly linked with the generalisation and maintenance of how training affects work. Velada et al., (2007) indicate that the more training content is retained, the more knowledge is transferred to the workplace. Diamantidis and Chatzoglou (2012) find that learning significantly influences the usefulness of training. Finally, Homklin et al., (2014) show that learning from training has a positive relationship with the transfer of knowledge.

2.10.3 Relationship between behaviour and results

Studies on the relationship between behaviour and results are rare (Homklin et al., 2013); nevertheless, the relationship has been confirmed (Clement, 1982; Homklin et al., 2013; Lin et al., (2011). Difficulties surrounding the relationship between behaviour and results include the long delay between improvement in work behaviour and organisational impact. Other variables that influence the relationship between behaviour and results come from inside and outside of the organisation (Clement, 1982). Furthermore, behaviour and results are considered higher levels of Kirkpatrick's model, which makes them more difficult to measure (Homklin et al., 2013). On the other hand, the relationship between the four levels, may influence several factors. The following section describes the factors that influence training effectiveness, particularly training characteristics.

2.11 Training characteristics influencing the training effectiveness

The training literature reveals the effects of certain factors on training effectiveness (Aldrich, 2002). The training design and delivery (training characteristics) factors and individual characteristics are the most factors that affect training effectiveness (Clark et al., 1993; Kontoghiorghes, 2001). In this research training design and delivery factors is termed as training characteristics. Training characteristics are referred to training environment, training methods, trainer performance and behaviour, training content and training objectives (Kirkpatrick and Kirkpatrick, 2006; Iqbal et al., 2011).

According to Kirkpatrick (1996), the attributes that influence training effectiveness are: training objectives, training content, training materials, trainer performance, training methods, the training environment and training management. The training characteristics include the training content, training goals, training methods, training environment and trainer, all of which can influence trainees' learning levels and perceived usefulness of the training programme (Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Kirkpatrick and Kirkpatrick, 2006; Nikandrou et al., 2009; Diamantidisand Chatzoglou, 2012). All of these factors affect trainees' reactions (Jeng and Hsu, 2005) and learning levels (Tan et al., 2003). Furthermore, the training characteristics affect the transfer of knowledge to the workplace (Rouiller and Goldstein, 1993; Axtell et al., 1997; Kontoghiorghes, 2002).

Researchers have suggested a variety of training characteristics that influence training effectiveness (Baldwin and Ford, 1988; Campbell, 1988; Holton et al., 2000; Tannenbaum and Yukl, 1992; Salas and Cannon-Bowers, 2001). Other studies have shown the effects that these factors have on training effectiveness (Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Kirkpatrick and Kirkpatrick, 2006; Nikandrou et al., 2009; Diamantidis and Chatzoglou, 2012) and the significant moderating effects they have on training effectiveness (Bates, 2007; Homklin, 2013).

Furthermore, several training characteristics affect training effectiveness; therefore, it is necessary to consider their impact. Thus, previous research studies recommend considering the impact of available resources and trainers performance and behaviour on training effectiveness (Clark et al., 1993, Bhatti et al., 2013; Goldstein, 1993; Yiu and Saner, 2005; Linghame et al., 2006). Consequently, examining the impact of training characteristics on training effectiveness (reaction, learning, intention to transfer learning, behaviour and results) is important in order to understand why certain training outcomes occur.

Previous researchers have identified the training characteristics that affect the training effectiveness (reaction, learning, behaviour and results). Further, the extant literature on training characteristics includes pre-training interventions and activities, trainee readiness, the training environment, training methods, trainer performance and behaviour, training content and training objectives. A good combination of these factors may lead to training effectiveness. Hence, these factors are critically reviewed in pre- and post-training events in the following section.

2.11.1 Training characteristics before training

Before taking a training programme, a trainee often has expectations about the quality of the design, the delivery of the training and its job relevance. Such expectations may be based upon pre-training activities or the trainee readiness.

2.11.1.1 Pre-training interventions and activities help to set expectations about training and outcomes

Pre-training interventions aim to enhance the learning process (Cannon-Bowers, 1998; Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). Pre-training intervention refers to activities or materials that are identified before a training or practice session begins to develop the potential for learning and transfer of learning, as well as the efficiency and effectiveness of practice during training (Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). Pre-training interventions aim to enhance the learning process through attentional advice, goal orientation, advance organisers, preparatory information and pre-practice briefs (Cannon-Bowers, 1998; Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010) in order to increase trainees' self-efficacy and preparation for training. Pre-training interventions and activities or materials distributed before a training or practice session can help to develop the potential for learning and transfer of learning, as well as the efficiency and effectiveness of practice during training (Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). Attentional advice is defined as a pre-training intervention that provides "information, independent of performance content, about the process or strategy that can be used to achieve an optimal learning outcome during training" (Cannon-Bowers et al., 1998,p. 294). Advance organisers is referred as "a category of activities such as outlines, text, aural descriptions, diagrams and graphic organisers that provide the learner with a structure for information that will be provided in the practice environment" (Cannon-Bowers et al., 1998, p. 298). Pre-practice brief is defined as "sessions where team performance expectations can be clarified, and roles and responsibilities established before team practice" (Cannon-Bowers et al., 1998, p307). Mesmer-Magnus and Viswesvaran (2010) show that pre-training interventions and activities, and learning are significantly related.

Pre-training interventions and activities are important factors that influence trainees' expectations towards the training and its outcomes (Cannon-Bowers, 1998; Msemer-Magnus and Viswesvaran, 2010). Therefore, pre-training interventions and activities are important for setting expectations and supporting learning and the transfer of knowledge. Baldwin and Magjuka (1991) show that trainees report greater intention to use their training when they receive relevant information before a training programme begins. Mesmer-Magnus and Viswesvaran (2010) also show that trainees provided with a pre-training goal orientation (whether mastery- or performance-oriented) perform better on indicators of cognitive skill-based and affective learning compared to trainees who are not provided with a pre-training goal. The same researchers also find that pre-training preparation enhances learning.

2.11.1.2 Trainee readiness helps to set expectations about training and outcomes

Trainees have readiness to learn when they are in a state of preparedness to learn the information that they need to know in order to cope effectively with the learning experience (Khan and Mirz, 2016; Knowles et al., 2012). Readiness is defined as having the necessary knowledge and skills to participate in the training or a willingness to try new things to benefit from the training programme (Baldwin et al., 2009). Therefore, trainee readiness refers to "the extent to which individuals are prepared to enter and participate in training" (Holton, 2005, p. 45). Ford and Noe (1987) show that individuals' attitudes about past training experiences influences the degree to which they express a need for new training.

Machin (2002) claims that increases in individual training readiness before training helps to ensure individual preparation to fully engage in a learning experience and to distribute training resources to those who expect to benefit most from development. As argued by Baldwin et al. (2009), each individual enters the training programme with certain expectations, motivations and attitudes that determine their training outcomes, in combination with the training characteristics.

Thus, the trainee's readiness can help them develop expectations about the training outcomes (Bates et al., 2007), as well as the training characteristics. Trainee readiness includes unique individual attitudes, motivations and expectations for training (Baldwin et al., 2009; Tannenbaum et al., 1993). Readiness for training is also affected by the degree to which trainees are involved in assessing the training needs and planning the training, as well as the extent to which their expectations are clarified, the degree of choice and other unexplored influences (Holton, 1996).

The significant relationship between trainee readiness and training outcomes has been confirmed. For example, Putter (2013) shows that trainee readiness is significantly correlated with transfer of knowledge. Baldwin et al. (1991), Holton (1996), Hicks and Klimoski (1987) and Tannenbaum et al., (1991) find that trainee readiness is a useful predictor for motivation to learn. Holton et al., (2000) and

Kirwan and Birchall (2006) show the positive influence of trainee readiness on motivation to learn, while Tannenbaum et al., (1993) support the critical influence of trainee readiness on training, as well as job-related outcomes. Colquitt et al., (2000) find that pre-training motivation to learn positively affects learning and transfer of training, while Bhatti et al., (2013), Payne et al., (2008) and Kirwan and Birchall (2006) find that trainee readiness is positively related to training transfer, which is mediated by transfer motivation. On the other hand, Rouna et al., (2002) show an insignificant relationship between learner readiness and transfer of learning. Baldwin et al. (2009), Tannenbaum et al., (1993) and Tracey and Tews (1995) argue that cognition may play a critical role in determining training effectiveness. Finally, trainee characteristics play a critical role in the level of variance in training outcomes (Van der Klink et al., 2001), which affects trainees' expectations for the training programme.

Moreover, prior research has demonstrated the significant relationship between learner readiness and intention to transfer learning. For example, Bates et al., (2012) and Hutchins et al., (2013) find a significance relationship between learner readiness and intention to transfer learning.

Previous research has explored the effect of factors on trainee readiness. For example, Facteau et al., (1995) find that the training environment influences trainees' motivation to learn, while Orpen (1991) finds that environmental variables, such as training resources, are significantly associated with trainee motivation and perceived training quality. In contrast, Buzrukova et al., (2012) reveal that insignificant effect of trainee readiness on training effectiveness. The use of a single proxy variable that measures trainee readiness may not support its influence on training effectiveness (Chung et al., 2016).

2.11.2 Training characteristics post-training

Previous research that evaluates training characteristics post-training considers all four levels in Kirkpatrick's model (reactions, learning, behaviours and results), either individually or in terms of the relationship between two discrete levels.

2.11.2.1 Training environment

The environment of training is referred to as an area or place where a training programme is conducted (Charney and Conway, 2005). The environment should allow the trainer to achieve all the training goals. There are certain criteria that have to be considered in the training environment, such as physical facilities, equipment (Van Wart et al., 1993), accommodation, classrooms, etc. (Iqbal et al., 2011). Haertel and Walberg (1988) argue that these criteria influence trainee feedback. Diamantidis and Chatzoglou (2012) add that if the training environment is suitable, the trainer will be motivated to deliver a successful training programme. Brown and McCracken (2009) contend that the training environment affects the trainee's desire to participate in the training. Therefore, the training environment and its location support trainees to learn (Harris and Tessmer, 1992).

Consequently, Park and Jacobs (2009) suggest that the training environment has to be supported and facilitated to help conduct training practices. Even if a training programme is designed and organised perfectly it will fail if the training environment does not have the right facilities (Diamantidis and Chatzoglou, 2012). Treven (2003) reveals that the required training facilities might vary, e.g., from a small training area to a large one. Brown and McCracken (2009) show that physical logistical restrictions, such as the training climate and time constraints, limit the trainee's opportunity to absorb knowledge and skills. Therefore, some factors should be avoided when designing and delivering training programmes, such as a training area that is small, noisy, uncomfortable, distracting and difficult to reach. Charney and Conway (2005) suggest that the trainer check the training environment beforehand to make any necessary adjustments and prepare a comfortable for place the trainees to learn. Park and Jacobs (2009) also confirm that the trainer is responsible for providing a good training environment. Therefore, trainees are more likely to be satisfied with the training if they perceive the training environment to be sufficient. The present study focuses on the effect of the training environment on reaction and learning.

Facteau et al., (1995) and Charney and Conway (2005) state that the training environment is critical to the usefulness of the training programme and learning outcomes. Iqbal et al., (2011) and Tan et al., (2003) find that the training environment significantly influences learning. Furthermore, Iqbal et al., (2011) find that the training environment has a significant meditating effect on the relationship between reaction and learning. On the other hand, Diamantidis and Chatzoglou (2012) find that the training environment has an insignificant influence on learning, which is perhaps due to an inappropriate training environment. Charney and Conway (2005), therefore, encourage instructors to create training areas that are similar to the workplace to motivate participants to acquire knowledge and skills, which will enhance the usefulness of the training programme.

Furthermore, the resources used in a training programme include the teaching materials (Kidder and Rouiller, 1997), as well as audio-visual aids, handouts and study materials. The training material ensures the success of the training programme; therefore, participants should be instructed on how to use them appropriately (Charney and Conway, 2005; Diamantidisand and Chatzoglou, 2012). Schraeder (2009) stresses the importance of training brochures, advertising materials and communications to show a high degree of proficiency throughout the entire training programme. According to Dick and Carry (1996), training materials affect training evaluations (Lee and Pershing, 1999); therefore, attention should be paid to their quality, changeability and difficulty levels, and they should interact with the training environment (Hellebrandt and Russell, 1993). Finally, Lanigan (2008) shows that the quality of the training material is linked to trainees' reactions.

Training equipment and facilities play significant roles in the training process (Cooper, 1995). Facilities should be comfortable and convenient, refreshments should be provided and breaks should be taken (Kirkpatrick and Kirkpatrick, 2006; Bimptos and Petridou, 2012). Machin and Fogarty (2003) also show that activities that enhance the transfer of knowledge significantly influence the intention to transfer learning.

Furthermore, training facilities differ based on the size of the training environment and type of training being provided. Storr and Hurst (2001) stress that successful training programmes need to fit the available facilities and resources. Treven (2003) shows that the facilities required for a small training programme may vary from large lecture rooms to small conference rooms with highly developed instructional technology. Similarly, Kirkpatrick and Kirkpatrick (2006) recommend using audio-visual aids in training programmes for several reasons: it makes communication with trainees easier and it grasps the interest of the trainees and amuses them, which creates a positive learning environment. Therefore, the training facilities, equipment and media aids are essential to presenting training material and content, and they should be selected properly in order to ensure the successful delivery of training programmes.

Kirkpatrick and Kirkpatrick (2006) agree that a lack of suitable training facilities may negatively affect trainees' attitudes. Diamantidis and Chatzoglou (2012) find that the training environment has an insignificant effect on learning and the usefulness of learning. As Giangreco et al., (2009) suggest that insufficient resources, poor teaching materials and overly frequent lessons may cause profound negative results. North et al., (2000) and Towler and Dipboye (2001) suggest that training design and delivery affects trainees' reactions to training. Therefore, sufficient resources, good teaching materials and accessible lessons may positively influence trainees' reactions. Conversely, Giangreco et al. (2009) suggest that effective administrative and delivery of training may not ensure high levels of trainee satisfaction. Foxon (1993) argues the inappropriate use of media (training facilities) may inhibit the intention to transfer learning to the workplace. Arthur et al., (2003b) show that the efficiency of training will vary according to the methods of delivery of training being used and skills being trained. Therefore, it is necessary to include other factors, such as training methods, trainer performance and behaviour, training content and training objectives for training effectiveness.

2.11.2.2 Training methods

A successful training programme needs the appropriate teaching methods (Dean, 1994; Storr and Hurst, 2001). Training methods are the means and instruments for delivering a training programme in order to accomplish the training objectives; therefore, the selection of those methods is a significant decision (Dean, 1994). Foxon (1993) argues that inappropriate methods inhibit the intention to transfer learning to the workplace. This should be taken into consideration when designing and delivering any training programme (Bimbitsos and Petridou, 2012; De Cenzo et al., 2015; Yaghi et al., 2008).

Training methods significantly affect the intention to transfer learning. Nikandrou et al., (2009) suggest that training methods could affect the perceived usefulness of the training. Moreover, Lim (2000) shows that instructional methods promote the transfer of learning, while Bansal and Thakur (2013) find that the quality of training is significantly related to the intention to transfer learning. Furthermore, Yelon et al., (2004) find that the perceived usefulness of the training material (e.g., instructional methods) significantly mediates the relationship between motivation and intention to transfer learning.

Training methods play a critical role in determining the usefulness of training (Arthur et al., 2003b, Burke et al., 2006). Alvarez et al., (2004) find that instructional techniques and learning principles influence the transfer of knowledge. Axtell et al. (1997), Yamnill and McLean (2005) and Hutchins (2009) suggest that if the training content and materials are similar to the needs of the organisation, then the participants may improve their skills and knowledge and their understanding of the training material will be significant. Acton and Golden (2003) argue that certain methods such as computer-based training and Web-based training may be more useful for some organisations and less useful for others. Nikandrou et al., (2009) find that behavioural modelling, where trainees act as if they are in the workplace, has a significant effect on learning. Furthermore, Daffron and North (2006) show that training design has a significant impact on training. According to Lau (2010), the aim of using various training methods is to gain better results and outcomes from the training.

It is also possible that there is no such thing as a prefect training method. Arthur et al. (2003b) argue that no single method is better than another; therefore, no method is more effective than another for delivering training. For example, Al-Athari (2000) find that the training methods used by Arab organisations fail to support trainees in the learning process. Instructors may not be familiar with new training methods such as groups discussion and case studies, or the trainees may not believe that new methods have value; therefore, new training methods are seen as time-consuming and a waste of money. Lucas (2005) reveals that workers usually prefer to complete their duties using traditional procedures and methods, and perceive rather than new training methods to be risky and problematic. Furthermore, unqualified and unskilled instructors tend to use traditional methods, such as lectures, because they lack experience with advanced training methods such as games and simulations (Agnaia, 1997).

Atiyyah (1991) states that the training methods used in Arab organisations are traditional and limited with lectures being the common method. Discussion groups, case studies, role-playing exercises, games and simulations are used infrequently. Moreover, Albahussain (2000) finds that the most popular techniques applied by Arab organisations are seminars, conferences and lectures. Lucas (2005) indicates that trainers prefer to use traditional methods rather than the new ones because they consider it is risky and difficult, or because they lack experience with advanced training methods (Agnaia, 1997). So the proper design and implementing of training programme can be achieved by well organise of training content into manageable learning sessions, set suitable of training schedule, professional and appropriate selection of used of training methods and approaches as well by satisfy participants interest and meet trainees attributes. The aim of this study is to examine the effects of training methods on reaction and learning. The following subsections provide further details on the effects of other training characteristics, trainer performance and behaviour, and training content and training objectives on training outcomes namely: reaction, learning, behaviour, intention to transfer learning, behaviour and results.

2.11.2.3 Trainer performance and behaviour

A training programme can be successful by involving and supporting key stakeholders in the training. According to Herschbach (1997), all employees of training institutions, such as trainers and administrators, are fundamental to the success of training programmes. Several actors play important roles in the training process, including trainers (Herschbach, 1997; Franceschini and Terzago, 1998) who play significant roles in designing and delivering training. The trainer is defined as the person who is responsible for conveying the training objectives to the trainees and plays an important role in achieving efficacy within the training programme (Latif, 2012). Brown and McCracken (2009) argue that the trainer plays an important role in inspiring participation from the trainees and administering training activities effectively. Ghosh et al., (2012) stress that the instructor must not only inspire the trainees to participate in discussions, but they must also have the necessary skills to listen to the trainees. The characteristics of the successful trainer identified by Moss (1993) include planning, being prepared and showing support and empathy for the trainees. This study focuses on the effect of trainer performance and behaviour on reaction and learning.

Additionally, the training environment helps the trainer present the training material without difficulties. Charney and Conway (2005) suggest the trainer check the training location beforehand in order to make any necessary adjustments.

Buckley and Caple (2009) state that the role of the trainer is to be an effective communicator and proactive thinker. The trainer also holds an important role in carrying out the training objectives of the organisation. A trainer's skills should range from practical to administrative (Latif, 2012). A good trainer is one who is knowledgeable and articulates their knowledge (Blair and Seo, 2007). Furthermore, the trainer's role is to ensure that a significant amount of learning is transferred to the workplace (Latif, 2012). Foxon (1993) argues that inconsistency can affect the trainer's level of credibility, which can inhibit the intention to transfer knowledge. Therefore, Nikandrou et al., (2009) suggest that the trainer should be reliable and effective.

It is obvious that trainer performance influences trainee reaction. Therefore, the trainee's perception of the trainer's performance will positively or negatively affect the trainee's level of satisfaction. According to Steiner et al. (1991), trainees should perceive the trainer as a facilitator through which to gain knowledge and skills. Hesseling (1966) argues that the trainer contributes to the effectiveness and success of the training. Gauld and Miller (2004) propose that the effectiveness of the trainer is important for the final return on investment because the trainer motivates the trainees to acquire knowledge and skills (Forsyth et al., 1995), which may influence trainees' reactions and learning levels.

Researchers have confirmed that trainer performance affects trainees' reactions to training (Kirkpatrick, 1967; Kidder and Roullier, 1997). Kirkpatrick (1967) points out that trainees are more likely to give better assessments to trainers with active personalities and low scores to trainers with less dynamic personalities. Basarab and Root (1992), Indira (2008), Iqbal et al., (2011) and Ghosh et al., (2012) find a positive relationship between trainer performance and behaviour, and reaction. The trainer's behaviour will determine the trainee's perception and their final evaluation of the training programme. According to Kirkpatrick (1967), trainer behaviour involves both the content of their lessons and their teaching process. Morris (1984) states that the content of the lessons relates to the trainer's familiarity with the topics and the teaching process includes the suitability of the trainer's teaching styles. The level of trainee satisfaction is greater when the trainer's performance and behaviour are greater, and trainees are more likely to describe the trainers as reliable and effective (Nikandrou et al., 2009).

Hesseling (1966) observes that the trainer's main role is to measure the usefulness of the training and prove that the selected training approaches will achieve the expected outcomes. Charney and Conway (2005) and Lawson (2006) indicate that the appearance of a trainer (e.g., physical appearance, teaching and communication ability) influence trainees' perceptions of the usefulness of the training, as well as the relevance of the acquired knowledge to their job. Steiner et al., (1991) state when a trainee perceives trainer behaviour is inappropriate, they will be will be inclined to question trainer competence and reject his or her behaviour which reduce the effectiveness of training. According to Morris (1984), the positive behaviours by the trainer result in a greater number of positive evaluations, even if the training programme is considered less useful or mismanaged. Diamantidis and Chatzoglou (2012) reveal an insignificant relationship between trainer performance and behaviour, and learning. They explain that a consistent trainer who displays appropriate behaviour during the implementation of the programme may increase the impact of the training, thus improving the knowledge and abilities of the trainees, and highlighting the relevance of the training to their daily work tasks.

Furthermore, specific criteria should be taken into account when selecting a trainer. According to Chen et al. (2007), it is important to determine if the trainer's background and experience fit the intended outcomes of the training. For example, Atiyyah (1991) suggests that most trainers and supervisors in Arab organisations have limited expertise when it comes to using and adopting new training methods. Towler and Dipboye (2001) suggest other criteria for selecting a trainer, including communication skills, knowledge of the content, ability to use training aids and facilities, ability to control the learning environment, and ability to listen to and ask questions. Therefore, Kirkpatrick and Kirkpatrick (2006) suggest observing the trainer's performance in a similar training situation before deciding if they are a good fit. In the same regard, Bennett and Leduchowicz (1983) reveal that the trainer should be observable and pervasive within the organisation to help him become known, to get close to the problems that training can help solve and to link-up with the political and information systems.

2.11.2.4 Training content

According to Gauld and Miller (2004), training content should involve theoretical and practical aspects, as well as the transfer of new knowledge and skills. Training content is described as training materials, such as manuals, hand-outs, notes, etc. (Carliner, 2003; Charney and Conway, 2005). Schraeder (2009) suggests training content, material and methods, such as PowerPoint slides, overheads and hand-outs, are all required to be well organised and to ensure the quality of the training, gaining capacity by trainees certify the high level of professionalism of used of the material and methods. These materials affect learning outcomes (Kontoghiorghes, 2002, 2004; Kirkpatrick and Kirkpatrick, 2006). Also, the effectiveness of training process is shown through content efficiency which represent the effective consume of training resources (Al Yahya and Mat, 2013).

The perceived usefulness of the training affects trainees' reactions, learning and behavioural changes (Bhatti and Kaur, 2010; Kontoghiorghes, 2001; Nikandrou et al., 2009). For example, Warr and Bunce (1995) and Warr et al., (1999) find that the perceived usefulness of the training significantly affects trainee satisfaction. Chen et al., (2007) show that the usefulness of training and its relevance to the workplace ensure that employees will be satisfied with the training programme. Similarly, Nikandrou et al., (2009) support Clark et al.'s (1993) argument that the learner's perception of the relevance of the training programme (job utility) or usefulness of the training for their work affects the transfer of learning.

According to Giangreco et al. (2009), trainees measure the usefulness of training based on its balance of theoretical and practical content. Similarly, when trainees perceive an imbalance between theoretical and practical training issues, their satisfaction will generally be low. Switzer et al. (2005) propose that irrelevant training content creates negative outcomes in the work environment. Furthermore, Bhatti and Kaur (2010) argue that the similarity of the training content to the workplace leads to positive reactions and increases the transfer of learning to the workplace (Garavaglia, 1993). The validity of the training is fundamental to the transfer of learning because it enhances trainees' positive reactions and improves their self-efficacy, as suggested by Bhatti and Kaur (2010). Therefore, this study aims to investigate the effect of training content on behaviour.

While extensive research has revealed the effect of training content on the usefulness to training, other studies have shown the effect of training content on trainees' reactions (Bhatti and Kaur, 2010). Bhatti and Kaur (2010) argue that some scholars (e.g., Baldwin et al., 1991; Noe and Schmitt, 1986; Russell et al., 1985) study trainees' reactions to the organisation and the content of training, while others emphasise trainees' satisfaction with the relevance of the training to their jobs (e.g., Latham and Saari, 1979; Wexley and Baldwin, 1986). According to Holton (1996), trainees perceive whether the training content is relevant to their jobs, or not. Kontoghiorghes (2001), and Kirkpatrick and Kirkpatrick (2006) propose that training content affects learning. Therefore, Axtell et al. (1997), Yamnill and McLean (2005), and Hutchins (2009) suggest that if the training content and material are similar to the needs in the workplace, it may improve the skills and knowledge acquired by the participants.

The training content affects the learning level in Kirkpatrick's four-level model. For instance, Holton (1996; 2005) states that when trainees feel the training content (material and methods of training) are relevant to their jobs, they maximise their abilities to apply their knowledge to the workplace. Liebermann and Hoffmann (2008) reveal that the learning level has a direct effect on the intention to transfer learning. Therefore, Velada et al. (2007) argue that the transfer of learning will increase because the trainees have previous knowledge and skills to apply learned new knowledge and skills when performing job duties, and if those learned skills and knowledge relate to job requirement. Thus, a careful training design is important to transfer learning and accomplish the training objectives.

Velada et al., (2007) show that trainees who gain knowledge and skills are more likely to apply them to their workplaces. Kirkpatrick (1994) argues that behavioural change happens because of learning. In Kirkpatrick's model, behavioural change evaluates training effectiveness, which is concerned with the ability to apply what is learned to the workplace (Latif, 2012). Sofo (2007) shows that new knowledge and skills are transferred to the workplace in order to improve performance and productivity. Bates et al., (2007) and Grohmann et al., (2014) reveal a significant relationship between training content and the transfer of learning. Furthermore, 10% of acquired knowledge and skills are applied to the workplace (Fitzpatrick, 2001). Diamantidis and Chatzoglou (2012) support this finding by revealing an insignificant relationship between training content and training usefulness. Even if the acquired knowledge is accurate, the training will not be adequate if it is not applied to the job (Tsang, 1997).

Consequently, all training outcomes (reaction, learning, behaviour and results) are influenced by the training content (Farr et al., 1993). More specifically, Diamantidis and Chatzoglou (2014) show a significant relationship between the application of training content and job performance (training results). Thus, the training should avoid needless repetition and misconceptions (Lee and Pershing, 1999). The training content should also be organised and fit the method of delivery (Robinson and Robinson, 1989). Moreover, knowledge related to job requirements becomes out-dated quickly (Latif, 2012). Therefore, Latif (2012) proposes paying more attention to the training content. In this regard, Kauffeld and Lehmann-Willenbrock (2010) recommend that higher levels of training content be used if it is necessary to integrate knowledge, skills and abilities for a specific set of duties. The following section discusses training objectives and how they affect behaviour.

2.11.2.5 Training objectives

Training must be conducted in accordance with the training needs, which includes the desired outcomes, and all features of the programme should be measurable (Kirkpatrick and Kirkpatrick, 2006). A training objective is an important aspect of the training design; therefore, any absence of training goals negatively influences the training evaluation process and influences the overall success of the training programme (Buckley and Caple, 2004; Goldstein and Ford, 2002). Tracey et al., (1995) maintain that training objectives should be clarified, as should the requirements for participant performance. Training objectives are the key input for training design. Carefully setting training objectives plays an important role in training effectiveness. Therefore, this study investigates the effect of training objectives on behaviour.

Kozlowski et al., (2001), Carliner (2003) and Kirkpatrick and Kirkpatrick (2006) contend that training goals should be established carefully in order to help trainees understand how the training objectives relate to their work duties. Likewise, if trainees understand that training will increase their job performance, it may encourage them to acquire knowledge and skill. Doherty and Bacon (1982) find several benefits of setting the training objectives when designing the training programme, such as selecting the issues to be included in the training content, setting the criteria for measuring effectiveness, helping to select participants, and emphasising communication and relationships between participants and trainers.

Bimpitsos and Petridou (2012) contend that the planning stage is important for efficient training programmes, which involves formulating of training objectives. Thus, determining the proper training objectives helps to make training more effective. In contrast, Bowman and Wilson (2008) argue that bad training design can lead to misunderstanding about the goals of the training. Bennett and Leduchowicz (1983) state that training design and delivery, including setting training goals and objectives, are the trainer's the main roles. Moreover, setting objectives is an effective motivational instrument for improving performance across a number of situations (Locke and Latham, 1990). Miller (2002) argues that training professionals know how to improve training programmes beforehand by determine the objectives of the training. According to Collins (2002) and Goldstein (1989), training objectives must be vivid, visible and definitive, in order to be successful. Training objectives are critical for training evaluations and future training programmes (Reid and Barrington, 2011); therefore, they must be consistent with the objectives of the training evaluation (Lee and Pershing, 1999).

Goal-setting significantly affects the transfer of learning (Brown, 2005; Diamantidis and Chatzoglou, 2012; Latham and Saari, 1979; Morin and Latham, 2000; Reber and Wallin, 1984; Richman-Hirsch, 2001; Wexley and Baldwin, 1986; Wexley and Nemeroff, 1975). Tziner et al., (1991) argue that goal-setting offers information that is useful for improving self-efficacy. Reber and Wallin (1984) show that setting goals in safety training leads to significant improvements in the observed use of safe procedures nine months later. Johnson et al., (2012) find that goal-setting strongly affects behaviour. Gist and Stevens (1998) and Stevens and Gist (1997) show that trainees who set outcome goals (to achieve superior outcomes) transferred less of their learning to the workplace compared to trainees who set learning goals (to improve their skills). Thus, goal-setting is likely to be a useful tool for increasing the transfer of skills and knowledge to the workplace. The extant literature has focused on the determination of the training characteristics and how these affect reaction, learning, intention to transfer learning, behavioural change and results.

2.12 Gaps in the literature

A gap exists in the extant literature because past research has focused mainly on evaluating training outcomes at the end of the training programme. Little empirical work has measured training outcomes pre-test and post-test (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). This highlights the need for further empirical research. Consequently, this research was conducted pre-training, immediately after training and 2–3 months after training.

Even though previous studies have investigated post-training evaluations, they have focused on the effects of training characteristics. Furthermore, they have looked at Kirkpatrick’s four levels (reaction, learning, behaviour and results) either individually or in terms of the relationship between two discrete levels. Little empirical work has explored the impact of training characteristics factors on training effectiveness (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013). Therefore, further empirical research is needed to provide a better understanding of the impact of training characteristics on training effectiveness. Consequently, this research seeks to examine the moderating variables of training characteristics, as well as their subsequent impacts on training outcomes: reaction, learning, intention to transfer learning, behaviour and results.

Furthermore, after reviewing the related studies and research on training and development, human resources development and training evaluation, this study identified some other significant gaps in the literature. The other gap is the shortage of comprehensive research, and thorough investigations and analysis on the effects of training characteristics on the transfer of learning. It is true that there is an increasing focus on the transfer of learning, but there is a lack of research exploring the effects of individuals, training design and work environment factors on the transfer of learning to help understanding how to overcome this problem (Homklin et al., 2014; Giangreco et al., 2009; Iqbal et al., 2011; Salas and Cannon-Bowers, 2001).

Moreover, there tends to be a gap between what authors suggest and what is actually practised in business. Although it has been proposed that more research be done on how to conduct training evaluations successfully, few empirical studies have examined this topic. Most research indicates that trainee reaction is the common criterion used by organisations to measure and evaluate the effectiveness of training, but few empirical researchers have investigated training evaluation at the reaction level (Alliger and Janak, 1989; Arthur et al., 2003a; Powell and Yalcin, 2010).

Furthermore, there is a gap in the literature regarding the assumption that Kirkpatrick's four levels are somehow linked. A review of the literature indicates that little research validates this assumption (Alliger and Janak, 1989; Kirkpatrick, 1996; Kirkpatrick and Kirkpatrick, 2006). This highlights the need for more empirical studies to prove or disprove this assumption (Bates, 2004; Santos and Stuart, 2003). Thus, this study intends to investigate the links between the four training outcomes.

Moreover, previous studies have indicated that most Arab countries, including Gulf countries, have difficulties with evaluating training (Al-Sayyed, 2014; Abdalla and Al-Homoud, 1995; Abdalla et al., 1998; Al-Athari and Zairi, 2002; Al-Fathaly and Chakerian, 1983; Al-Tayeb, 1986; Atiyyah, 1991; Bahar et al., 1996; Hung, 2010). This highlights the need for more research to overcome training evaluation obstacles in Arab countries.

Finally, despite the large number of studies on training evaluation, little research has been conducted in Arab countries, including oil and gas regions, such as Oman (Budhwar and Debrah, 2001; Al-Hamadi et al., 2007). To date, a limited number of studies have investigated this issue within the context of Arab countries in general and especially in the Sultanate of Oman. Hence, this research seeks to evaluate the effect of training characteristics on training effectiveness in the Omani national oil and gas industry, specifically in health and safety training.

2.13 Conclusion

This chapter reviewed the extant literature as it relates to the aim of the research, which was to explore the effects of training characteristics, as well as the moderating effects on training effectiveness (reaction, learning, intention to transfer learning, behaviour and result). This chapter outlined the definition of training and development. Then, it discussed training types, training evaluation definitions, training evaluation benefits and its challenges, training effectiveness, main training elements, training evaluation models and their criticisms, training effectiveness measures**,** and training characteristic. The next chapter presents the conceptual framework for this study

Chapter Three: Conceptual Framework

3.0 Introduction

This chapter presents a graph of the conceptual framework behind the training characteristics that influence training effectiveness. The aim of this chapter is to address the major issues presented in the literature review, which specifically discussed the training and development (T&D) literature, as well as the training evaluation and models that form the basis of this research.

This chapter discusses the adaptation of the conceptual framework, independent variables, dependent variables and factors of training characteristics when evaluating training effectiveness. The proposed research questions, hypotheses development and research context are presented at end of this chapter.

3.1 Conceptual framework and hypotheses

A conceptual framework unifies the constructs that are linked to the phenomena being researched and the assumed relationships between them. According to Voss et al., (2002), a conceptual framework provides an overview of the categories that are going to be studied in the research. It also helps the author relate the present body of knowledge to the ongoing problem that is going to be explored in the study. The proposed framework is based on an analysis of the existing literature on training evaluation, which is used to identify additional factors that might be important when evaluating training effectiveness. The literature review revealed the following issues:

- Kirkpatrick's model is the most common, but few studies confirm the causal link between the four training outcomes (reaction, learning, behaviour and results).
- The literature indicates that little research has taken place on training evaluation at the reaction level, even though most training evaluations are conducted at this level.
- Although training evaluation is deemed important, no study has examined the factors of training characteristics (e.g. training environment, training methods, trainer performance and behaviour, training content, training objectives) in a causal link between the four training outcomes. This researcher suggests including the factors of training characteristics, which may be influential when evaluating training effectiveness when they are put into practice. There is a gap between the theory and practice of training evaluation.
- Most studies focus on investigating the influence of training characteristics in the transfer of learning. Nevertheless, there are few studies on overcoming the lack of training transfer.

This research proposes a framework (Figure 3.1) drawing on Kirkpatrick's four levels of training evaluation. It aims to improve, predict and explain the main training characteristics that influence the health and safety training effectiveness in the national oil and gas industry in Oman which will also enhance training evaluations and make the training programmes of national oil and gas companies more effective. Based on various theoretical perspectives, the training characteristics are training environment, training methods, trainer performance and behaviour, training content, training objectives while training outcomes are reaction, learning, behaviour and results. The framework proposed by this study extends Kirkpatrick's model using previous research on training evaluation. The framework posits that the outcomes of health and safety training are determined by the training characteristics. Drawing upon the extant literature (Arthur et al., 2003a; Baldwin et al., 2009; Homklin et al., 2013), this paper recommends including training characteristics in the relationship between the four outcomes proposed by Kirkpatrick's model in order to evaluate their impact on training effectiveness. Furthermore, the framework proposes that training characteristics moderate the relationships between the four training outcomes. The intention also is that this work will result in new developments in training programmes in order to provide workers with the knowledge to work more effectively. The following is a discussion of the main constructs that emerged from the literature review in Chapter 2.

The extant literature has suggested conducting training evaluation before, during and after training; therefore, this study will examine the effect of training characteristics before and after a training programme is completed.

This study will also investigate selected variables in Kirkpatrick's four levels. Some theorists and researchers suggest investigating the influence of training characteristics on training effectiveness. As such, this study examines various antecedent variables to evaluate training effectiveness, including the training characteristics (environment, methods, trainer, content and objectives). In general, the availability of training and the training characteristics are considered significant when evaluating training effectiveness.

The extant literature on training characteristics includes pre-training interventions and activities, trainee readiness, the training environment, training methods, trainer performance and behaviour, training content and, training objectives. An optimal combination of these factors leads to training effectiveness. Hence, these factors are the primary focus of this study.

Prior studies have examined the impact of training characteristics on trainee reaction while other studies have explored their impact on learning. Therefore, this research will examine the impact of training characteristics (training environment, training methods, and trainer performance and behaviour) on training outcomes (reaction, learning).

The study will include three dimensions (training environment, training methods and, trainer performance and behaviour) to examine their moderating effect on the relationship between reaction and learning, as shown in Sections 3.7.1, 3.7.2 and 3.7.3.

To examine the direct effect of the variables on the relationship between behaviour and results, the research will include two dimensions of training characteristics: training content and training objectives, as depicted in Sections 3.7.4 and 3.7.5.

The work will include two dimensions (training content and training objectives) to examine their moderating effect on the relationship between behaviour and results as shown in 3.7.4 and 3.7.5

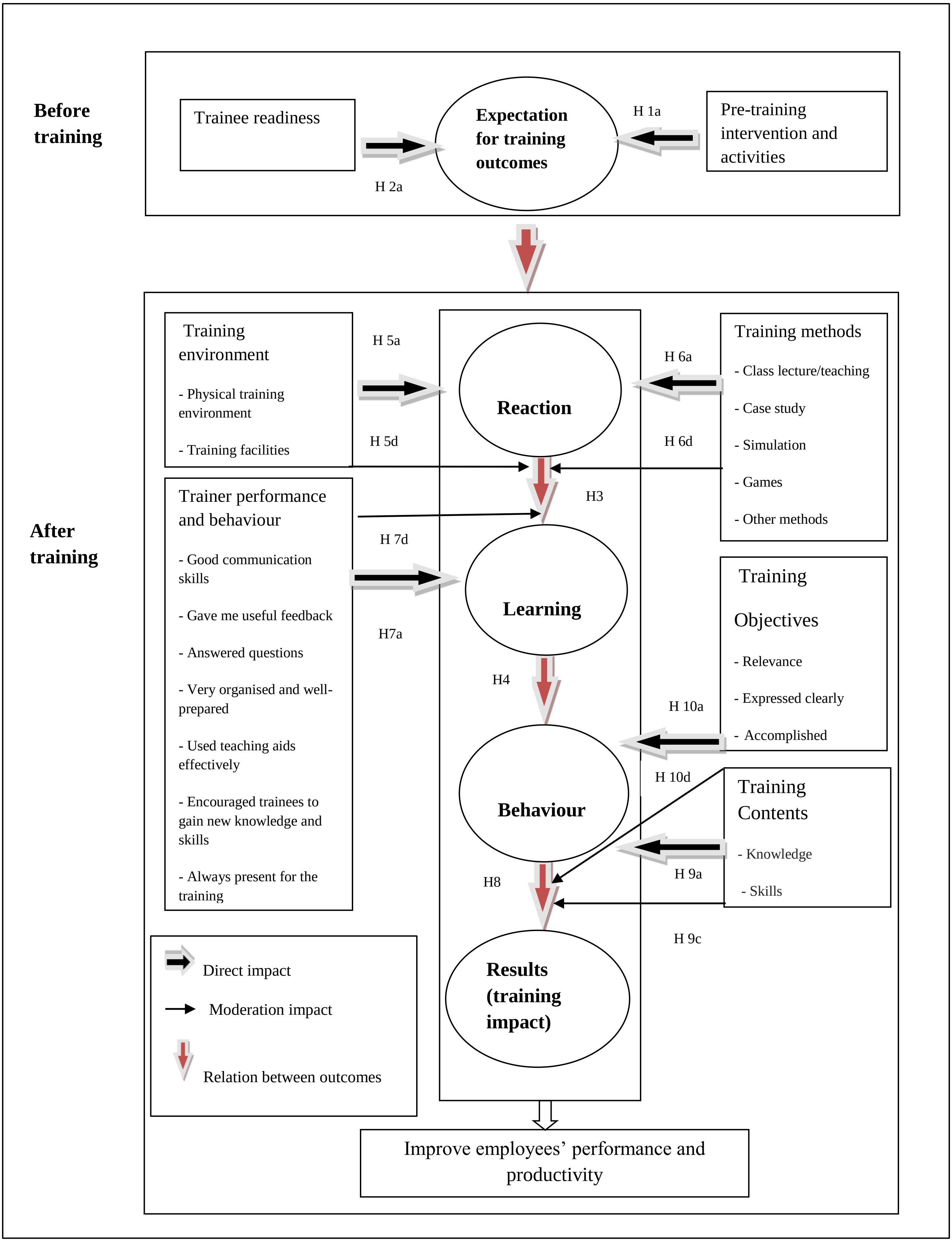


Figure 3.1 Conceptual framework of the study

3.2 Further development of the conceptual framework

In addition to the factors mentioned above, this study discusses the need to identify additional elements mentioned in Chapter 2 that might be important when evaluating training effectiveness. This study will explore the causal relationships between Kirkpatrick's four levels: reaction, learning, behaviour and results (as shown in Section 3.8). However, Kirkpatrick's four levels do not take into account the intention to transfer learning as an outcome of training, and few studies have done so. Therefore, this study identifies the intention to transfer learning as an outcome of training and examines its relationship with learning, as shown in Section 3.8.

The extant literature investigates the impact of training characteristics, including pre-training interventions and activities, and trainee readiness on expectations for training outcomes. This study will evaluate the effect of these factors on expectations of the training environment, and expectations of trainer performance and behaviour, as shown in Sections 3.6.2 and 3.6.3.

Furthermore, this study will explore the impact of the training environment and training methods on the intention to transfer learning. It will also investigate the impact of trainer performance and behaviour on reactions and intention to transfer learning, as shown in Section 3.7.3. Moreover, this research will examine the impact of training content and objectives on results, as shown in Sections 3.7.4 and 3.7.5. Finally, the author will use three dimensions of training characteristics (training environment, training methods, and trainer performance and behaviour) will be used to investigate the effect of the variables on the relationship between learning and intention to transfer learning, as shown in Sections 3.7.1, 3.7.2 and 3.7.3.

3.3. Proposed research questions and development of hypotheses

The primary research questions are as follows:

1. *What are the effects and moderating roles of training characteristics (i.e., pre-training interventions and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and training objectives) on the relationships between training outcomes(reaction, learning, intention to transfer learning, behaviour and results) during three separate periods (before, immediately after and 2–3 months after training)?*
2. *What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?*

Therefore, this research is specifically concerned with achieving the following research objectives:

- To identify four Kirkpatrick training (reaction, learning, behaviour and results) and intention to transfer learning, and the key training characteristics that influence them.
- To examine the effect of training characteristics (pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, training objectives) on expectations of the training environment, expectation of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results.
- To investigate the moderating impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content, training objectives) on the relationship between reaction, learning, intention to transfer learning, behaviour and results.
- To develop a conceptual framework and related set of hypotheses that defines the impact of training characteristics on training effectiveness in national oil and gas companies.
- To provide recommendations and suggestions for maximising training effectiveness in practice and contribute to the existing literature.

The hypotheses presented in Table 3.1 were formulated based on these research questions. They are discussed in detail in sections 3.4, 3.5, 3.6, 3.7 and 3.8.

3.4. Dependent variable: Training effectiveness

Understanding training effectiveness is meant to improve the process of training in order to accomplish objectives and goals (Homklin et al., 2013) and training evaluations are used to determine whether these objectives have been met. In this regard, Alliger et al., (1997) state that training evaluation is fundamental for judging the success of a training intervention (Saks and Belcourt, 2006). If an organisation decides to evaluate its training programme, it must first identify the outcomes and criteria for the evaluation in order to determine its effectiveness (Noe, 2016). As such, assessing the effectiveness of training is defined as the determination of the level of acquired practical skills and any changes in behaviour that result from undertaken the training (Borate et al., 2014). According to Alliger and Janak (1989), the reaction to training, learning accomplishment, transfer of learning, behavioural change and organisational results, as described in Kirkpatrick's approach, aim to evaluate training effectiveness. A survey of 300 HRD executives from different of types of U.S. organisations by the American Society for Training and Development (ASTD; 2009) found that 67% chose Kirkpatrick's model and applied it. This model helps evaluators identify complex processes and presents the results in a simple and clear format (Goldstein, 1993; Molenda et al., 1996; Van Dyk et al., 1997). This study uses reaction, learning, behaviour, intention to transfer learning and results as dependent variables in order to understand the impact of training characteristics and their relationships with reaction, learning, intention to transfer learning, behaviour and results.

3.5 Training characteristics affecting training effectiveness

The training design determines how the programme will be organised and delivered (Kirkpatrick and Kirkpatrick, 2006; Noe, 2016). Training characteristics are significant for training design and delivery. Training characteristics refer to training content, goals, methods, environment, and trainer performance and behaviour (Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Kirkpatrick and Kirkpatrick, 2006; Nikandrouet et al., 2009; Diamantidis and Chatzoglou, 2012).

Previous empirical studies have indicated that the perceived efficiency of training determines trainees' satisfaction, learning and behavioural change, which has an influence on the evaluation of the training (Lee and Pershing, 2002; Charney and Conway, 2005; Diamantidis and Chatzoglou, 2012). The effectiveness of the training is affected by organisations and individuals, as well as by training characteristics before, during and after training (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001). This study focuses on evaluating the effect of pre-training interventions and activities, trainee readiness, the training environment, training methods, trainer performance and behaviour, training content and training objectives on the training outcomes, which are reaction, learning, intention to transfer learning, behaviour and results.

3.6 Training characteristics before training

The literature review in Chapter 2 shows that trainees often have expectations about the quality training characteristics and its relevance to their job before the programme begins. Such expectations may be based on pre-training interventions and activities, or the trainee's readiness.

3.6.1 Pre-training interventions and activities set expectations for training outcomes

Previous research shows that pre-training interventions and activities have a significant effect on training outcomes. For example, Cannon-Bowers (1998) and Mesmer-Magnus and Viswesvaran (2010) show that pre-training interventions and activities have a positive effect on training outcomes. Specifically, Mesmer-Magnus and Viswesvaran (2010) show that pre-training interventions and activities, and learning have a strong relationship with each other.

The following hypothesis about pre-training interventions and activities was developed based on the results from previous studies about expectations for training outcomes:

H1a: Pre-training interventions and activities have a significant positive relationship with expectations for training outcomes.

3.6.2 Pre-training interventions and activities set expectations of training characteristics.

Pre-training interventions and activities are important factors that influence trainees' expectations toward the training and its outcomes (Cannon-Bowers, 1998; Msemer-Magnus and Viswesvaran, 2010). Baldwin et al., (1991) show that trainees report greater intention to use their training when they receive relevant information before the programme begins. Mesmer-Magnus and Viswesvaran (2010) also show that trainees provided with a pre-training goal orientation (whether mastery- or performance-oriented) perform better on indicators of cognitive, skills based and affective learning than trainees who are not provided with a pre-training goal. The same researchers also show that pre-training preparation enhances learning. The following hypothesis was created with these findings in mind:

H1b: Pre-training interventions and activities have a significant positive relationship with expectations of the training environment.

Pre-training interventions and activities, materials identified before training and practice sessions can help to develop the potential for the transfer of learning, as well as the efficiency and effectiveness of the training (Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). Therefore, pre-training interventions and activities are highly important for setting expectations around training, as well as supporting learning and the transfer of knowledge. Trainees develop more expectations when they are provided with pre-training interventions and activities. Mesmer-Magnus and Viswesvaran (2010) show that training interventions and activities are significantly related to learning. The following hypothesis is suggested based on these findings:

H1c: Pre-training interventions and activities have a significant positive relationship with expectations of trainer performance and behaviour.

3.6.3 Trainee readiness and expectations for training outcomes

Previous studies have found that trainee readiness has a significant effect on training outcomes. Tannenbaum et al. (1993) show that trainee readiness has a significant influence on training and job-related outcomes. Meanwhile, Putter (2013) finds that trainee readiness is significantly correlated with the transfer of knowledge. Lim (2000) reveals that the expected utility of the training content has a significant effect on the transfer of learning. Chung et al. (2016) reveal that trainee readiness has a significant impact on training outcomes. Finally, Ruona et al. (2002) show that the individual's ability and motivation has a significant effect on their reaction to the usefulness of the training. The following hypothesis is proposed based on these results:

H2a: Trainee readiness has a significant positive relationship with expectations for training outcomes.

3.6.4 Trainee readiness and expectations of the training environment

Trainee readiness can help to set expectations for training outcomes (Bates et al., 2007) at the beginning of a training programme. Machin (2002) suggests that maximising trainee readiness beforehand is critical to achieving positive results from the training. Tannenbaum et al. (1993) found that trainee readiness significantly influences training and job-related outcomes. Furthermore, Hicks and Klimoski (1987), Tannenbaum et al. (1991), Holton et al. (2000) and Kirwan and Birchall (2006) show that trainee readiness has a positive effect on one's motivation to learn. More specifically, Facteau et al. (1995) find that the training environment influences the trainee's motivation to learn, while Orpen (1991) finds that environmental variables, such as training resources, are significantly associated with trainee motivation and perceived training quality. Alvarez et al., (2004) also find that instructional techniques and learning principles influence the transfer of knowledge. Therefore, the following hypothesis is proposed based on these suggestions:

H2b: Trainee readiness has a significant positive relationship with expectations of the training environment.

3.6.5 Trainee readiness and expectations of trainer performance and behaviour

Trainee readiness is not only a critical trainee characteristic (Holton et al., 2000), but it might also be one of the main pre-training interventions or pre-training factors that can help trainees benefit from a training programme (Machin and Treloar, 2004; Tannenbaum et al., 1993). Therefore, readiness plays a crucial role in setting trainees' expectations by giving them basic knowledge and skills to perform the training activities (Bhatti et al., 2013; Khan and Mirz, 2016). Ford and Noe (1987) show that individuals' attitudes about past training experiences influences the degree to which they express a need for new training. Machin (2002) claims that enhancing individual training readiness beforehand helps to ensure that the trainee is prepared to fully engage in the learning experience and to distribute training resources to those who expect to benefit most from development. Baldwin et al. (1991), Holton (1996), Hicks and Klimoski (1987) and Tannenbaum, et al. (1991) find that trainee readiness is a useful predictor for the motivation to learn. Holton et al. (2000) and Kirwan and Birchall (2006) also show that trainee readiness has a positive effect on the motivation to learn. Colquitt et al. (2000) find that pre-training motivation to learn positively affects learning and the transfer of knowledge. Meanwhile, Bhatti et al., (2013), Payne et al., (2008) and Kirwan and Birchall (2006) show that trainee readiness is positively related to the transfer of knowledge, which is mediated by the individual's motivation to transfer that knowledge. The following hypothesis is proposed based on these findings:

H2c: Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour.

3.7 Training characteristics in the post-training stage

The following sections present hypotheses that were developed based on the relationship between the training characteristics and training outcomes after training is completed.

3.7.1 The training environment and effectiveness

The training environment is of one of the most important factors in training design and delivery because it supports trainees in their learning (Harris and Tessmer, 1992). Basarab and Root (1992), and Iqbal et al., (2011) find a significant relationship between the training environment, training contents, methods, materials, and trainer and trainee reactions. Similarly, North et al., (2000) and Towler and Dipboye (2001) suggest that training characteristics have an impact on the trainee's reaction to the training. Several researchers (Storr and Hurst, 2001; Franceschini and Terzago, 1998) suggest that the training environment affects the efficiency of the training. Furthermore, Charney and Conway (2005) suggest that trainers should check the location before the training programme begins to make necessary adjustments and prepare a comfortable place for the trainees. Diamantidis and Chatzoglou (2012) add that if the training environment fits the aims of the programme, the trainer will be motivated to deliver successful training. Hence, trainees are more likely to be satisfied with the training if they perceive the training environment to be sufficient. Therefore, it is hypothesised that the training environment has a significant positive influence on trainees' reactions. Consequently, the hypothesis developed for this research is as follows:

H5a: The training environment has a significant positive relationship with reaction.

According to Facteau et al., (1995) and Charney and Conway (2005), the training environment plays a critical role in the success of a training programme. Iqbal et al., (2011) suggest that the training environment has a significant positive effect on learning. Therefore, the hypothesis proposed for this study is as follows:

H5b: The training environment has a significant positive relationship with learning.

Previous research considers the crucial influence of training characteristics on trainees' intentions to transfer learning. Machin and Fogarty (2003) reveal that activities that enhance the transfer of learning to daily work tasks (i.e., over-learning, fidelity, stimulus variability, principles, meaningfulness, self-management activities, relapse prevention and goal setting) are positively and significantly related to the intention to transfer learning to the workplace. For example, Tziner et al. (1991) argue that setting goals before the training greatly supports the transfer of learning. Gollwitzer (1999, p.501) says "goals or resolutions stand a better chance of being realised when they are furnished with implementation intentions that link anticipated suitable opportunities to intended goal directed behaviours". Thus, the positive significant relationship between setting learning goals and intention to transfer learning is confirmed (e.g., Yamkovenko and Holton, 2010).

H5c: The training environment has a significant positive relationship with intention to transfer learning.

The training environment affects both reaction and learning. For example, Facteau et al. (1995) and Charney and Conway (2005) state that the training environment's role is critical in terms of the emphasis and usefulness of the training programme and knowledge gained. In fact, researchers such as Charney and Conway (2005) suggest trainers set up a training area that is similar to the workplace to motivate participants to acquire new knowledge and skills, and to enhance the usefulness of the training programme. According to Hung (2010) and Kirkpatrick (1996), trainees with positive reactions were more likely to say that the suitable training environment influenced their learning performance. Moreover, Iqbal et al., (2011) found that the training environment had a significant positive impact on reaction and learning. The following hypothesis is based on prior research that has examined the direct effect of the training environment on reaction and learning:

H5d: The training environment moderates the relationship between reaction and learning.

Previous research has found that the training environment has a significant positive effect on learning (e.g. Iqbal et al., 2011) and that transfer activities have a significant effect on intention to transfer learning (e.g., Machin and Fogarty, 2003). The following hypothesis reflects these findings:

H5e: The training environment moderates the relationship between learning and intention to transfer learning.

3.7.2 Training methods and outcomes

Prior research provides theoretical and empirical support for a significant relationship between training methods and trainees' satisfaction with the training. For example, Lanigan (2008) shows that the training material is linked to reaction. Basarab and Root (1992), Indira (2008) and Iqbal et al., (2011) find that training methods have a positive effect on reaction to training. Dick and Carry (1996) confirm that training materials influence training evaluations, while Hellebrandt and Russell (1993) and, Lee and Pershing (1999) argue that training materials interact with the training environment. According to Park and Jacobs (2008), the training environment should make the training process more practical. According to Cooper (1994), training equipment and facilities play a significant role in the training process. However, most programmes use traditional training methods, such as class room. Lucas (2005) indicates that workers usually prefer to complete their duties using traditional procedures and methods, and perceive rather than new training methods to be risky and problematic. Atiyyah (1991) states that Arab organisations tend to use traditional methods, such as lectures, while discussion groups, case studies, role-playing exercises, games and simulations are used less frequently. Kirkpatrick and Kirkpatrick (2006) recommend using audio-visual aids in training programmes for several reasons: 1) it makes communication between trainers and their audience easier, 2) it attracts the interest of trainees and amuses them, and 3) it supports a positive atmosphere, if done correctly. Bimbitsos and Petridou (2012), De Cenzo et al., (2015) and Yaghi (2008) assert that the use of media aids to present training materials is a basic element of any training programme. Therefore, the following hypothesis is consistent with the findings that training methods have a significant impact on trainees' reactions to the training programme:

H6a: Training methods have a significant positive relationship with reaction.

The direct effect of training methods on learning has also been explored. For example, Arthur et al. (2003b), Burke et al., (2006) and Iqbal et al., (2011) find that training methods have significant effects on learning. Moreover, studies show that specific training methods have significant effects on learning. For example, Nikandrou et al. (2009) show the significant effect of behavioural modelling on learning, while Ratcliff-Daffron and Wehby-North (2006) investigate the significant effect of training characteristics on outcomes. Training equipment and facilities also play a significant role in training processes (Cooper, 1994). Therefore, the author proposes the following hypothesi is proposed:

H6c: Training methods have a significant positive relationship with learning.

Previous research shows that training methods affect trainees' reactions and learning. For example, Nikandrou et al. (2009) suggest that training methods can affect the perceived usefulness of the training. Lim (2000) reveals that instructional methods promote the transfer of learning to daily work tasks, while Bansal and Thakur (2013) find that the quality of training is significantly related to the intention to transfer learning. Meanwhile, Yelon et al. (2004) find that motivation significantly influences the intention to transfer learning, which is mediated through the perceived usefulness of the training material (e.g., instructional methods). The following hypothesis is based on these findings:

H6d: Training methods have a significant positive relationship with intention to transfer learning.

Previous research shows that training methods have a significant positive effect on reaction (e.g., Basarab and Root, 1992; Indira, 2008; Iqbal et al., 2011; Tan et al, 2003) and learning (e.g., Arthur et al. 2003b; Burke et al., 2006; Iqbal et al., 2011). The following hypothesis is consistent with these findings:

H6e: Training methods moderate the relationship between learning and intention to transfer learning.

3.7.3. Trainer performance and behaviour, and training outcomes

Previous empirical research has revealed that trainer performance has a significant effect on trainees' perceptions of training effectiveness (Basarab and Root, 1992; Indira, 2008; Iqbal et al., 2011; Lawson, 2006). The trainer is the person who is responsible for conveying the training objectives and plays an important role in creating an effective training programme (Latif, 2012). Ghosh et al., (2012) stress the importance of certain trainer characteristics, such as clarity in giving instructions, comfort with the subject matter, clarity in responding to questions, ability to keep the sessions lively and interesting, ability to use teaching aids effectively and rapport with trainees. Moreover, Ghosh et al., (2012) show that the instructor's comfort level with the subject matter and rapport with trainees are significant predictors of trainee satisfaction. In terms of the influence of trainer performance on learning levels, Charney and Conway, (2005) and Lawson (2006) suggest that trainer performance (e.g., teaching, ability to communicate, etc.) influence trainees' perceptions of the usefulness of the training, and affect their ability to acquire knowledge and skills that relate to their jobs. Moreover, trainer performance plays a significant role in influencing trainees' reactions to the training (Kirkpatrick, 1967; Kidder and Roullier, 1997). Basarab and Root (1992), Indira (2008) and Iqbal et al., (2011) show that trainer performance and behaviour are significantly related to reaction. According to Morris (1984), a positive perception of trainer's performance may compensate for a training programme that is perceived to be less useful or not well managed. Nikandrou et al., (2009) suggest that the trainer should be perceived as reliable by providing the theoretical framework and guidance for training activities. Based on these findings, it is hypothesised that trainer performance and behaviour are more likely to have an effect on the reactions of trainees.

H7a: Trainer performance and behaviour have a significant positive relationship with reaction.

Previous empirical research has found that trainer performance has a significant effect on trainees' learning (Carliner, 2003; Gauld and Miller, 2004; Iqbal et al., 2011; Nikandrou et al., 2009). Therefore, it is hypothesised that trainer performance and behaviour are more likely to have an effect on level of learning.

H7b: Trainer performance and behaviour have a significant positive relationship with learning.

Previous empirical research has revealed that trainer performance and behaviour have a positive effect on learning (Carliner, 2003; Gauld andMiller, 2004; Iqbal et al., 2011; Nikandrou et al., 2009; Lawson (2006). Furthermore, Nikandrou et al. (2009) suggest that trainer performance can affect the perceived usefulness of the training. Therefore, it is hypothesised that trainer performance and behaviour are more likely to have an effect on the intention to transfer learning.

H7c: Trainer performance and behaviour have a significant positive relationship with intention to transfer learning.

Prior studies show a positive significant relationship between trainees' reactions and level of learning (e.g., Alliger et al., 1997; Mathieu et al., 1992; Kirkpatrick, 1996; Warr et al., 1999; Leach and Liu, 2003; Tan et al., 2003; Lin et al., 2011; Homklin et al., 2013). Moreover, previous research shows that trainer performance and behaviour have a direct effect on trainees' reactions (e.g., Basarab and Root, 1992; Indira, 2008; Iqbal et al., 2011; Charney and Conway, 2005; Lawson, 2006). Furthermore, studies show that trainer performance and behaviour are related to the level of learning (e.g., Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Iqbal et al., 2011; Nikandrou et al., 2009). According to Steiner et al. (1991), trainees should perceive trainer performance as that facilitator who can help them gain knowledge and skills, otherwise they will attribute their poor performance to the instruction or difficulty of the tasks. Similarly, Hesseling (1966) argues that the trainer should contribute to the effectiveness and success of the training. The trainer should motivate the trainees to acquire knowledge and skills (Forsyth, et al., 1995); therefore, trainer's performance and behaviour influence the trainees' reactions and level of learning. The following hypothesis is proposed:

H7d: Trainer performance and behaviour moderate the relationship between reaction and learning.

Previous research has shown a positive significant relationship between reaction and learning (e.g., Alliger et al., 1997; Mathieu et al., 1992; Kirkpatrick, 1996; Warr et al, 1999; Leach and Liu, 2003; Tan et al., 2003; Lin et al., 2011; Homklin et al., 2013). Moreover, prior studies have indicated that trainer perforamcne and behaviour are significantly related to the level of learning (e.g., Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Iqbal et al., 2011; Nikandrou et al., 2009). Nikadrou et al., (2009) suggest that trainer performance can affect the perceived usefulness of the training. Therefore, the author proposes the following hypothesis:

H7e: Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.

3.7.4. Training content and outcomes

Several studies provide evidence that the perceived usefulness of the training elements (environment, method, trainer, content and training objectives) have an important effect on factors affecting training effectiveness (reaction, learning, behaviour and results) (Jeng and Hsu, 2002; Tan et al., 2003; Clark et al., 1993; Bhatti et al., 2012; Goldstein, 1993; Yiu and Saner, 2005; Lingham et al., 2006). Perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his/her job performance" (Davis, 1989, p.320). In line with the argument of Clark et al. (1993), Nikandrou et al., (2009) found that the relevance of the training programme (job utility) or usefulness of the training has an effect on the transfer of learning. Several studies have demonstrated the relationship between training content and the transfer of knowledge (Axtell et al., 1997; Seyler et al., 1998; Bates et al., 2007; Holton et al., 2000; Bates and Holton, 2004; Devos et al., 2007; Kirwan and Birchall, 2006). Bates et al., (2007) find that training content is significantly related to the transfer of knowledge. Meanwhile, Axtell et al.,(1997), Yamnill and McLean (2005), and Hutchins (2009) suggest that if the training content and material are similar to the work environment, it will improve the skills and knowledge of the participants and their understanding of the training materials will be easier. The significance of perceiving the usefulness of the training elements suggests that participants are generally willing to be involved in, or are more likely to engage in, training programmes primarily because of its relevance to their work tasks.

It is expected that training content influences behaviour. Therefore, the following hypothesis is suggested:

H2a: Training content has a significant positive relationship with behavioural change.

In terms of the direct effect of training content on results, previous research shows a positive significant relationship between behaviour and results (e.g., Clement, 1982; Homklin et al., 2013; Lin et al., 2011). Furthermore, Bates et al., (2007), Velada et al., (2007) and Grohmann et al., (2014) find a significant relationship between training content and behaviour, while Diamantidis and Chatzoglou (2014) find a significant relationship between the application of training content and job performance (training results). Therefore, the following hypothesis is proposed:

H2b : Training content has a significant positive relationship with results.

Prior research has shown that the training content affects the application of learned skills and knowledge in the workplace (Bates et al., 2007; Velada et al., 2007; Grohmann et al., 2014). For example, Bates et al., (2007) find that training content is significantly related to the transfer of knowledge. Similarly, Kauffeld and Lehmann-Willenbrock (2010) show that the transfer of knowledge can be increased when trainees attempt to apply the training content to their work tasks. Moreover, Axtell et al. (1997), Yamnill and McLean (2005) and Hutchins (2009) suggest that the relevance of training content is critical for determining how much knowledge will be transferred to the workplace. Furthermore, Diamantidis and Chatzoglou (2014) find a significant relationship between the application of training content and job performance (training results). All training outcomes (reaction, learning, behaviour and results) are influenced by the training content (Farr et al., 1993). According to the causal relationship between behavioural change and results, training content has a direct effect on behavioural change and results. Therefore, if trainees perceive that the training content is related to their jobs, they will apply their new knowledge and skills in a significant way. Based on these findings, the following hypothesis is suggested:

H4a: Training content moderates the relationship between learning and results.

3.7.5. Training objectives and outcomes

Training objectives are significant for training design and planning. For example, Glaister et al. (2013) state that training objectives are critical for linking training assessments with training design and delivery. According to Buckley and Caple (2004) and Goldstein and Ford (2002), a training objective is a significant input for training design; therefore, any absence of training goals negatively affects the training evaluation process and influences the success of the entire training programme. Miller (2002) argues that training professionals can improve a training programme beforehand by determining the objectives of the training. With regard to training evaluation and objectives, training objectives are standard for evaluations and future training programmes (Barrington and Reid, 2011); therefore, the objectives must be consistent with the purposes of the evaluation (Lee and Pershing, 1999). Doherty and Bacon (1982) find several benefits related to setting training objectives, such as helping with the training design and selecting issues for the training content, creating a set of criteria to measure the success of a training programme, helping to select participants and emphasising communication between participants and trainers. Tziner et al., (1991) suggest that goal setting may contribute to the transfer of knowledge. Prior research shows a positive relationship between goal setting and transfer of knowledge (e.g., Brown, 2005; Diamantidis and Chatzoglou, 2012; Gist et al., 1990; Johnson et al., 2012; Latham and Saari, 1979; Morin and Latham, 2000; Richman-Hirsch, 2001; Wexley and Baldwin, 1986; Wexley and Nemeroff, 1975). In particular, Reber and Wallin (1984) found a positive relationship between goal achievement and progress when they follow up on workers' use of safe procedures nine months later. In light of these findings, the following hypothesis is proposed:

H3a: Training objectives have a significant positive relationship with behavioural change.

Training objectives are an important input for training design and have a significant effect on results; therefore, any absence of training goals negatively affects the training evaluation process and influences the success of the training programme (Goldstein and Ford, 2002; Buckley and Caple, 2004). Moreover, research shows that training objectives have a signifciant effect on behvioural change (e.g., Brown, 2005; Diamantidis and Chatzoglou, 2012, Gist et al., 1990; Johnson et al., 2012; Latham and Saari, 1979; Morin and Latham, 2000; Richman-Hirsch, 2001; Wexley and Baldwin, 1986; Wexley and Nemeroff, 1975). Therefore, the following hypothesis is proposed:

H3b: Training objectives have a significant positive relationship with results.

The relationship between behavioural change and organisational results is explained by the effect that the training objectives have on this relationship. If trainees perceive that the training objectives are relevant to their work tasks, they will apply their new knowledge and skills, which accomplishes the organisational goal of the training. Previous studies demonstrate the significant relationship between training objectives and behavioural change (e.g., Brown, 2005; Diamantidis and Chatzoglou, 2012; Gist et al., 1990; Johnson et al., 2012; Latham and Saari, 1979; Morin and Latham, 2000; Richman-Hirsch, 2001; Wexley and Baldwin, 1986; Wexley and Nemeroff, 1975). Other studies show the relationship between behavioural change and results (e.g., Clement, 1982; Homklin et al., 2013; Lin et al., 2011). Therefore, the following hypothesis is presented:

H4b: Training objectives moderate the relationship between behavioural change and results.

3.8 Relationship between training outcomes

Several studies have confirmed the significant relationship between reactions and the level of learning. For example, Alliger et al. (1997) reveal a significant relationship between utility reaction, which measures the perceived utility or usefulness of a training, and learning. Harrison (1992), Warr and Bunce (1995) and Warr et al., (1999) suggest that reactions include enjoyment, utility and difficulty dimensions. Many studies also demonstrate a positive relationship between reaction and learning (Homklin et al., 2013; Kirkpatrick, 1996; Leach and Liu, 2003; Mathieu et al., 1992; Warr et al., 1999; Tan et al., 2003; Lin et al., 2011). This study aims to further investigate the relationship between reaction and learning; therefore, the following hypothesis is proposed:

H1: Reaction has a significant positive relationship with learning.

The intention to transfer learning to the workplace is considered an outcome of training (Hutchins et al., 2013; Yamkovenko and Holton, 2010). Intention to transfer learning refers to a trainee's intention to engage in specific behaviours that facilitate the transfer of new skills to the workplace (Bansal and Thakur, 2013). This intention to act has been studied from a training perspective and is considered to be a significant predictor of transfer of learning (Machin and Fogarty, 2004; Bansal and Thakur, 2013). Kirkpatrick's model does not consider this. However, Elangovan and Karakowsky (1999), Cheng and Ho (1998) and Holton and Baldwin (2003) show a clear relationship between expectations and training outcomes. Furthermore, several studies confirm a significant relationship between learning and behavioural change (Baldwin and Ford, 1988; Homklin et al., 2014; Lim and Johnson, 2002; Liebermann and Hoffmann, 2008; Velada et al., 2007). Based on these findings, the following hypothesis is proposed:

H2: Learning has a significant positive relationship with intention to transfer learning.

Finally, Clement (1982), Homklin et al., (2013) and Lin et al., (2011) all show a positive relationship between behaviour and results. Therefore, the following hypothesis is proposed:

H3: Behavioural change has a significant positive relationship with results.

The sections above present the framework for this empirical study, which takes into account the issues of training and training evaluation.

Table 3.1 Research hypotheses

Pre-training stage		
	Hypothesis number	**Description**
1	H1a	Pre-training interventions and activities have a significant positive relationship with expectations for training outcomes.
2	H1b	Pre-training interventions and activities have a significant positive relationship with expectations of the training environment.
3	H1c	Pre-training interventions and activities have a significant positive relationship with expectations of the trainer’s performance and behaviour.
4	H2a	Trainee readiness has a significant positive relationship with expectations for training outcomes.
5	H2b	Trainee readiness has a significant positive relationship with expectations of the training environment.
6	H2c	Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour.
Training stage		
7	H3	Reaction has a significant positive relationship with learning.
8	H4	Learning has a significant positive relationship with intention to transfer learning.
9	H5a	The training environment has a significant positive relationship with reaction.
10	H5b	The training environment has a significant positive relationship with learning.
11	H5c	The training environment has a significant positive relationship with intention to transfer learning.
12	H6a	Training methods have a significant positive relationship with reaction.
13	H6b	Training methods have a significant positive relationship with learning.

14	H6c	Training methods have a significant positive relationship with intention to transfer learning.
15	H7a	Trainer performance and behaviour have a significant positive relationship with reaction.
16	H7b	Trainer performance and behaviour have a significant positive relationship with learning.
17	H7c	Trainer performance and behaviour have a significant positive relationship with intention to transfer learning.
18	H5d	The training environment moderates the relationship between reaction and learning.
19	H5e	The training environment moderates the relationship between learning and intention to transfer learning.
20	H6d	Training methods moderate the relationship between reaction and learning.
21	H6e	Training methods moderate the relationship between learning and intention to transfer learning.
22	H7d	Trainer performance and behaviour moderate the relationship between reaction and learning.
23	H7e	Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.
Post-training stage		
24	H8	Behavioural change has a significant positive relationship with results.
25	H9a	The training content has a significant positive relationship with behavioural change.
26	H9b	The training content has a significant positive relationship with results.
27	H10a	The training objectives have a significant positive relationship with behavioural change.
28	H10b	The training objectives have a significant positive relationship with results.
29	H9c	The training content moderates the relationship between behavioural change and results.
30	H10c	The training objectives moderate the relationship between behavioural change and results.

3.9 Conclusion

The literature review in Chapter 2 showed that a well-known training evaluation model (Kirkpatrick's four levels) did not take into account training characteristics. Therefore, to understand the factors that influence training effectiveness (reaction, learning, behaviour and results), this research extends this model (Kirkpatrick's four levels) through the addition of five factors. These factors include the training environment, training methods, trainer performance and behaviour, training content and training objectives.

Based on the extent literature, the conceptual framework was developed at different stages of training (prior- and post-training) to examine the impact of training characteristics on training effectiveness.

Thridly hypotheses are proposed based on the conceptual framework in order to examine the impact of training characteristics on training outcomes before, during and after training.

Finally, this study conducts an empirical examination of the suggested hypotheses. The next chapter discusses the methodology.

Chapter Four: Research Methodology

4.0 Introduction

This chapter explains the data collection and statistical analysis methods that were used in this study. This chapter provides an overview of the research design and the methods used for data collection and data analysis. It explains, selects and justifies the research approach and methods for this thesis. It begins by identifying the basics of the research concept and research methodology. Then, it presents an overview of the underlying research philosophies and provides justifications for choosing the philosophical perspective for this research study. It also outlines the research design of this study. The chapter proceeds by considering the quantitative method as a research strategy and presents a justification for selecting this technique. Next, it provides a description of the data-collection procedures. Thereafter, a discussion of a variety of issues linked to the two major research methods (quantitative and qualitative) and a rationale for choosing the quantitative approach is presented. This chapter explains the survey development and adaption of the survey items. Also, it describes the measurement scales, data analysis procedures and techniques, and ethical considerations relevant to this study, and presents conclusions. This chapter ends with an overall overview of training and development in Arab countries and training and development in the Sultanate of Oman.

The current study adopted a quantitative data collection method that used the survey approach to gather data concerning the evaluation of training effectiveness to develop employees' performance. Previously validated scales and survey instruments were used to establish the survey used in this study. The survey included items that were regarded as indicators of the constructs in the proposed framework, which were developed in the previous chapter and modified, as required, from previously published literature for the context of this research. The data were coded and analysed to create the final conceptual framework using the Statistical Package for the Social Sciences (SPSS) and structural equation modelling (SEM) with Analysis of Moment Structures (AMOS) software. The primary purpose of this statistical technique was empirical validation of the conceptual framework and predicting relationships between constructs in the hypothesised manner.

4.1 Research methodology

Research is described as "something that people undertake in order to find out things in a systematic way, thereby increasing their knowledge" (Saunders et al., 2016, p. 5). Research is based on logical associations and not just beliefs (Ghauri and Grønhaug, 2010). Research is created in a rigorous way to discover new knowledge via a research methodology, which is defined as "the theory of how research should be undertaken" (Saunders and Rojon, 2014, p. 3). Remenyi et al., (1998) argue that the critical drivers for selecting a suitable research methodology are the research topic, research questions and obtainable resources. Therefore, it is necessary to describe the methods used to gather and analyse data in a systematic way that provides answers to the research questions and satisfies the aims of the study (Saunders et al., 2016). Hussey and Hussey (1997) state that a research methodology consists of all the issues related to the research process, the theoretical foundation, data collection and data analysis. Choosing a suitable research paradigm, data type and data-collection methods have important implications.

4.2 Research philosophy

Philosophy refers to the field of ideas, views and thinking about life and everything in it to handle daily practical problems (Ruona and Lynham, 2004). In this regard, the researcher employs a research philosophy to conduct a study in an appropriate and effective manner that assumes a specific worldview. The research philosophy helps the researcher choose the appropriate research strategy and methods (Saunders et al., 2012). The research philosophy is defined as a collection of assumptions, beliefs or philosophies about some aspects of the world or the development of knowledge and its nature (Collis and Hussey, 2014; Saunders et al., 2016). Consequently, this section describes the philosophical stance of the researcher in the current study when choosing the adopted method. Having considered the philosophical issues associated with various approaches, a researcher can decide on the most relevant data-collection and data-analysis processes.

According to the philosophy of science, research may be classified as ontological, epistemological or methodological (Antwi and Hamza, 2015). Methodology includes techniques that are used by researchers to investigate reality (Carson et al., 2001). Developing methodologies to conduct social research draws on the assumptions of ontology and epistemology (Easterby-Smith et al., 2012). According to Scotland (2012), it is impossible to engage in research without committing (often implicitly) to ontological and epistemological positions. Ontology, according to Lawson (2004), is the part of philosophy concerned with what is or what exists. This term was derived from two Greek words, “onto,” which means “being,” and “logos,” which mean “study” or “theory” (Antwi and Hamza, 2015). This approach focuses on issues related to being human within the world and whether individuals see social reality or aspects of the social world as (1) external, independent, given and objectively real or (2) socially constructed, subjectively experienced and the result of human thought as expressed through language (Wellington et al., 2005). The ontological approach helps methodologies address the nature of reality or what social research is supposed to study (Sarantakos, 2005).

On the other hand, epistemology can be defined as the theory of knowledge that informs the research process (Antwi and Hamza, 2015). This is the best way of enquiring into the nature of the world

(Easterby-Smith et al., 2012). The epistemological approach investigates issues, such as the association between the enquirer and the unknown (Naqvi, 2014). It also helps to inform methodologies about the nature of knowledge, what counts as a fact and where knowledge can be sought (Sarantakos, 2005). Guba and Lincoln (1994) state that two domains have emerged from epistemology: positivist and interpretive.

The majority of management research is designed around or both of these distinct philosophies (Blumberg et al., 2011; Saunders et al., 2016), as shown in Table 4.2. The following sections provide more detail about these philosophies.

4.2.1 Positivism

Positivism is a brand of epistemology and the approach of the natural sciences that assumes the social world exists externally and is described objectively (Easterby-Smith et al., 2015; Neuman, 2014; Saunders et al., 2016). It is the dominant form of research in most business and management research (Myers, 2013). A positivistic idea starts with the facts or reasoning of a social phenomenon. In this research philosophy, the objectives, facts or theories exist in the world, which are investigated by the researcher who proves their validity or reality using the given reason for the social phenomenon (Hussey and Hussey, 1997). The positivist research goal contains description as well as explanation and prediction in order to gain validity and reliability for the findings of the study (Nagel, 1986; Racher and Robinson, 2002).

Research is value free in the positivist paradigm, meaning the researcher should not be influenced by the subject of the research, and the researcher should not affect the study (Guba and Lincoln, 1994; Saunders et al., 2012). In short, researchers who select this paradigm maintain their own neutrality and disinterest and are uninvolved with the participants of the research. Thus, the researcher is capable of studying a phenomenon by remaining detached or independent, neutral and objective from what is being observed (Collis and Hussey, 2014; Easterby-Smith et al., 2015; Robson, 2002; Sale et al., 2002).

In positivism, explanation and prediction of a social phenomenon consists of establishing causal relationships between variables by establishing casual laws and linking them to deductive or integrated theory (Collis and Hussey, 2014). The existences of regularities or laws in social settings allow positivists to believe that they can make causal statements (Easton, 2010). Positivist researchers build on italicise fixed relationships within a phenomenon capable of being tested via hypothetic-deductive logic and analysis to increase the predictive understanding of a phenomenon (Chua, 1986; Dube and Pare, 2003; Orlikowski and Baroudi, 1991; Myers, 2013). Research is referred as positivist if there is "evidence of formal propositions, quantifiable measures of variables, hypotheses testing, and the drawing of inferences about a phenomenon from the sample to a stated population" (Orlikowski and Baroudi, 1991, p5).

In positivism, the principal data collection techniques include experiments and sample surveys (Christie et al., 2000; Orlikowski and Baroudi, 1991). Orlikowski and Baroudi (1991) argue that they allow researchers a certain amount of control over data collection and analysis through manipulation of research design parameters and statistical procedures. In positivistic philosophy, statistical methods are used for the analysis of data to explain social phenomena. The positivist methods mostly involve the collection and statistical analysis of numerical data in order to explain the workings of the social world (Rolfe, 2013). As positivism focuses on measuring social phenomena, it is associated with quantitative approaches of analysis based on statistical analysis of quantitative research data (Collis and Hussey, 2014). The only way for social science to be able to reach the accomplishments of natural science in explanation, prediction and control is by applying the methods of natural science (Lee, 1991). The research methods and tools of the natural sciences are seen to be applicable for studying social and organisational phenomena (Myers, 2013). Therefore, the positivist philosophy is ideally suited to quantitative approaches (Blumberg et al., 2011) in order to measure and analyse causal relationships between variables within a value-free framework (Denzin and Lincoln, 2008); to improve a tested hypothesis.

Positivist researches are almost always using large sample data. Sample sizes in quantitative research which is oriented towards positivism are much larger than those used in qualitative ones. Hence statistical methods can be used to ensure that samples are representative (Carey, 1993). Quantitative methodology is concerned with attempts to measure social phenomena and collect and analyse numerical data, and focus on the links among a smaller number of attributes across many cases (Tuli, 2010). Positivism methodologies have been adopted in cross-sectional and longitudinal studies to explain social regularities and patterns (Grochal-Brejdak, 2016; Kura, 2012; Gray, 2017). A quantitative method (survey questionnaire) with the longitudinal frame, underpinning positivism philosophy was selected for this research. The survey which is a quantitative method is a typical positivist instrument (Chen and Hirschheim, 2004). The following sub-section provides more detail about the quantitative approach.

4.2.1.1 Quantitative approach

Deductive reasoning is the basis of the quantitative approach, meaning data are gathered to examine the validity of a prior theory or hypothesis. Section 4.3.1 provides further information about the deductive approach. The quantitative method primarily emphasises quantification in data collection and analysis (Bryman and Bell, 2015) by using measurements to describe the objects and associations under examination (Sarantakos, 2005). This method is concerned with testing objective theories on the relationship between theory and research (Bryman and Bell, 2015; Creswell, 2014). Quantitative research involves a deductive approach that predominantly emphasises testing the theories that are driving the research (Collis and Hussey, 2014). The quantitative approach is mainly related to positivist philosophy, which focuses on examining theory (Saunders et al., 2016). Table 4.1 presents further assumptions related to the positivism.

Table 4.1 Philosophical assumptions related to positivism

	Positivism
Independence	The observer must be independent from what is being observed.
Value freedom	Objective criteria rather than human beliefs and interests determine what to study and how to study it.
Causality	The aim of the social sciences should be to identify causal explanations and fundamental laws that explain regularities in human social behaviour.
Hypothesis and deduction	Science is a process of hypothesising fundamental laws and deducing what kinds of observations will demonstrate the truth or falsity of these hypotheses.
Operative	Concepts need to be operational so that facts can be measured quantitatively.
Reductionism	Problems, as a whole, are better understood if they are reduced to the simplest possible elements.
Generalisation	To generalise about regularities in human and social behaviour, it is necessary to select samples of sufficient size from which inferences may be drawn about the wider population.
Cross-sectional analysis	Regularities can most readily be identified by comparing variations between samples.

Source: Easterby-Smith et al., (2015, p. 52).

Since this research provides evidence of propositions (Chapter 2), quantifiable measures of variables (Chapter 3), hypothesis testing and the describing of a phenomenon from a sample to a stated population, the positivist epistemology was considered to be appropriate for this research. An additional discussion on this issue is provided in the last paragraph of this section. Nevertheless, the next sub-sections briefly discuss the relevance of the other epistemologies (e.g. interpretivism) for this research.

4.2.2 Interpretivism

Interpretivism is an epistemological position that suggests social phenomena are constructed subjectively by individuals' worldviews rather than by objective and external factors (Easterby-Smith et al., 2015; Saunders et al., 2016). Based on this assumption, the view of the world is not external and objective: people create their worldview by sharing their experiences with others and by communicating. Hermeneutics and phenomenology are the philosophical basis of interpretive research (Boland, 1985). Interpretive research does not attempt to prove or disprove a hypothesis, as in positivist studies.

Thus, all interpretive research aims to understand how members of a social group, through their participation in social processes, enact their particular realities and endow them with meaning, to show how these meanings, beliefs and intentions of the members help to constitute their social action (Orlikowski and Baroudi, 1991). In short, interpretive research does not attempt to support or reject a hypothesis, as in positivist research. The aim of interpretive research is to gain an understanding of the meaning of social realities and a purpose is that it should be interesting in itself to audiences (Goldkuhl, 2012; Tekin and Kotaman, 2013; Walsham, 2009).

Therefore, the act of investigating reality influences social phenomena (Collis and Hussey, 2014). As such, the intent is to discover the reasons beyond the different experiences of people rather than to explore the exterior causes and primary laws of human behaviour (Bryman, 2001; Easterby-Smith et al., 2015). The focus of this paradigm is on people's thoughts and emotions, both individually and collectively (Easterby-Smith et al., 2015). To do so, the interpretivist researchers claim to start out with the belief that access to reality is only through social constructions such as language, consciousness and shared meanings (Kelivn and Myers, 2001; Myers, 1997). The role of the interpretivist researcher should be engaged in understanding (Goldkuhl, 2012). Thus, interpretivists reject the status of a researcher as a neutral observer and place the emphasis on human interpretation and understanding, and the researcher and his informants are interdependent and mutually interactive as a part of valid knowledge (Gray, 2017; Hudson and Ozanne, 1988; Saunders et al., 2016).

The qualitative approach is appropriate for gaining in-depth detail and descriptions about a certain phenomenon or worldview. Meanwhile, constructionism which is a philosophical viewpoint about the nature of knowledge focuses on measuring social reality (Collis and Hussey, 2014). Based on this assumption, the adoption of the interpretivist philosophy helps to increase comprehension and understanding of human acts (Hussey and Hussey, 1997). Consequently, interpretivist researchers encourage the use of qualitative data to advance knowledge (Kaplan and Maxwell, 1994). Action research, grounded theory, ethnographic studies, case studies (also arguable), and meta-analysis (a hybrid) are the research methods adopted within interpretivism (Neuman, 2014; Racher and Robinson, 2002; Weber, 2004) with limited responders. These methods which are about interpretive research are an alternative for collecting data by the positivistic approach (Neuman, 2014; Myers, 2013).

4.2.2.1 Qualitative approach

Qualitative research focuses primarily on words when collecting and analysing data (Bryman and Bell, 2015). Qualitative research is concerned with investigating and understanding the meaning of socially constructed phenomena by generating theory. In other words, it helps researchers examine and explain the meanings that people assign to their experiences (Creswell, 2014). Qualitative research incorporates the inductive approach because it is concerned with establishing new theories (Collis and Hussey, 2014). Section 4.3.2 provides further details about the inductive approach. In this case, the researcher builds a new theory through observation or research findings (Bryman and Bell, 2015). Qualitative research is relevant for the interpretivist philosophy where the researcher selects and collects data related to the study topic within its context and employs an emerging design where classifications are identified during the process (Collis and Hussey, 2014). Table 4.2 provides a summary of distinctions between positivist and interpretivist philosophies.

Table 4.2 Comparison of positivism and interpretivisim

	Positivism	**Social constructivism**
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research arch progresses through	Hypotheses and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be defined so they can be measured	Should incorporate stakeholders' perspectives
Unit of analysis	Should be reduced to simple units	May include the complexity of 'whole' situations
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Source: Easterby-Smith et al., (2015, p. 53).

In order to achieve the benefits of the positivist and interpretivist approaches, it is critical to select the most appropriate methodological paradigm. According to Amaratunga et al., (2002), the positivist method makes research faster and more economical because the data are aggregated from a large sample. Although its advantages, it fails to ascertain deeper underlying meanings and explanations of causes and processes of a research phenomenon, trying to explain the complexity of social matters via a one dimensional linear cause-and-effect bond and it cannot account for how the social reality is shaped and maintained (Gray, 2017; Rahman, 2017; Tekin and Kotaman,2013). Also, the limitations of interpretivist approach have been suggested (Rahman, 2017; Tekin and Kotaman, 2013; Wu, and Chen, 2005). It takes a considerable amount of time and being subject to biases and the potential for fabrication (Rahman, 2017; Wu, and Chen, 2005). It is unable to be generalised to the whole population of the research because of using of small sample size (Gray, 2017; Rahman, 2017; Tekin and Kotaman, 2013; Wu, and Chen, 2005). Its data interpretation and analysis may be more difficult or complex because it views the world as too complex to be reduced to a set of observable 'laws' (Gray, 2017; Rahman, 2017). Interpretivist research does not recruit scientific and standardised research methodologies and because interpretivism philosophy rejects the notion of objective facts and laws (Tekin and Kotaman, 2013; Wu, and Chen, 2005). In short, both the positivist and interpretivist approaches have their own advantages and disadvantages so that the advantage of the one may compensate the disadvantage of the other, and they differ in methodologically (Purnamasari1, 2016).

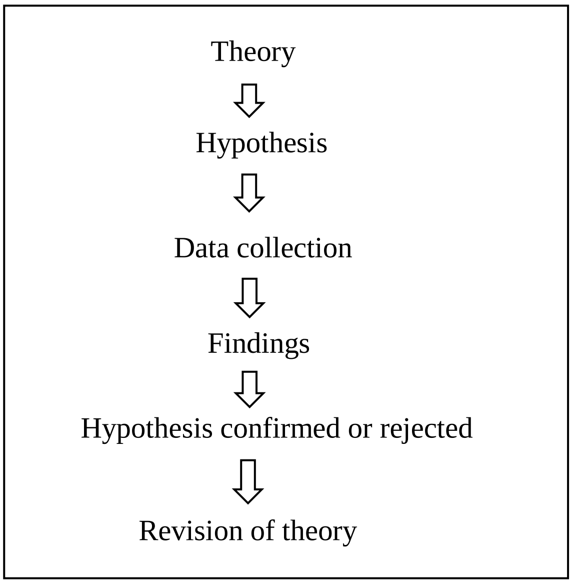
Overall, from the above discussion, it can be seen that the positivism paradigm is the most appropriate one for this research. This because this study evaluates the impact of training characteristics on training effectiveness with the aim of improving employees' performance in the Omani national oil and gas industry. To do so, a conceptual framework was developed along with 30 measurable hypotheses based on previously published literature. This study offers evidence of propositions (Chapter 2) and quantifiable measures of variables (Chapter 3), hypothesis testing and transferring a phenomenon from a sample to a stated population. Therefore, a positivist approach was selected because it was necessary to examine the proposed conceptual framework in an attempt to understand the impact of training characteristics on training effectiveness. Thus, the interpretivist philosophy was considered less relevant for this study.

4. 3 Deductive versus inductive

Research philosophies are based on two main research approaches, namely deduction and induction. Deduction is usually based on positivism, while induction owes more to phenomenology (i.e., interpretivism (Saunders et al., 2016). Theories based on deductive and inductive approaches help researchers understand, explain and/or predict business phenomena (Sekaran, 2003). This section provides further discussion of these two research approaches.

4. 3 .1 Deductive approach

The deductive approach helps the researcher create a strategy to test the hypotheses and draw conclusions through logical reasoning (Ghauri and Gronhaug, 2010; Saunders et al., 2016). The deductive approach starts with theory and ends by determining the results of the research, as shown in Figure 4.2. Theory guides the research in the deductive approach (Bryman and Bell, 2015). The researcher starts with a theory based on existing research to find a solution to an existing problem. Then, a hypothesis is developed based on this existing theory and examined through empirical observations. Next, the collected data are examined to obtain the results of the study. Later, the proposed hypotheses are either accepted or rejected based on the findings. Finally, the theory is adjusted if required (Bryman and Bell, 2015; Saunders et al., 2016; Trochim and Donnelly, 2016).



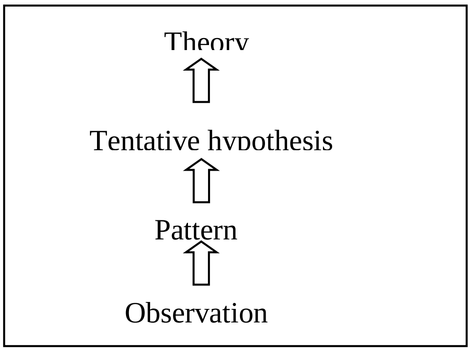
Source: Bryman and Bell, 2015

Figure 4.1 The deductive approach

4. 3.2 Inductive approach

With the inductive approach, researchers collect the data and develop theories based on an analysis of the data (Saunders et al., 2016). With this approach, theory is the outcome of the research (Bryman and Bell, 2015; Saunders et al., 2016) and the processes of induction involve drawing generalisable conclusions from specific observations (Bryman and Bell, 2015). This approach helps to develop an understanding of the ways in which humans interpret their social worlds (Saunders et al., 2016).

In contrast to the inductive approach, the deductive approach goes from observation to conclusion (Ghauri and Grønhaug, 2010), as shown in Figure 4.2. The researcher starts with specific observations and measures, and eventually begins to detect patterns and regularities, and formulates tentative hypotheses that they can later investigate. Finally, the researcher develops general conclusions or theories (Trochim and Donnelly, 2016).



Source: Trochim and Donnelly, 2016.

Figure 4.2 The inductive approach

This study's main objective is to determine the relationships between training characteristics and training outcomes. The deductive approach is considered the most suitable for the current research because it is necessary to test the theory through empirical investigation.

4.4 Research design

Research design refers to the procedures and plans that are necessary to fulfil the objectives and answer the research questions posed by the study (Blumberg et al., 2011; Saunders et al., 2016). Votg and Johnson (2011, p. 338) refer to research design as "the science (and art) of planning procedures for conducting studies so as to get the most valid findings". Cooper and Schindler (2001) describe research design as a plan to examine and provide answers to research questions. For the current study, the research design consisted of specific objectives that came out of the overall research question, data collection methods, data analysis and ethical considerations (Saunders et al., 2016). Thus, the plan has three phases: research design, data collection and data analysis. During the design stage of this study, a comprehensive review of the literature was conducted to evaluate training effectiveness and to provide a justification for the study. Four types of research designs have been identified: (1) exploratory, (2) descriptive, (3) casual or explanatory and (4) a combination of the previous three (Gray, 2017, Chambliss and Schutt 2013). This study employed exploratory research to provide an overview of the research problem by reviewing the existing literature and to propose a conceptual framework and hypotheses. This design was used to further identify the relationships between the variables in this study. The evaluation of employees' training and development in the national oil and gas industry in Oman was to evaluate the impact of training characteristics on the training effectiveness and to subsequently investigate the moderating effect of these factors on the relationship between training outcomes namely reaction, learning, intention to transfer learning, behaviour and results. Therefore, exploring evaluation of Omani employees' training and development outcomes gives the researcher a greater understanding of their perceptions of the importance and implementation of training and development for companies, such as those in the Omani oil and gas industry. Furthermore, according to De Vaus (2002), exploratory research helps to verify certain methodological questions. After conducting the survey, it became clear that it would be necessary to cross-check the results by investigating specific issues such as the impact of training characteristics on training effectiveness to support the use of training evaluation before and after training. Thus, the research strategy was selected, and the reasons for this choice were described.

The data-gathering stage began when the researcher adopted a quantitative data-collection method and used the survey approach to generate data concerning evaluation training effectiveness in the Omani oil and gas industry. A longitudinal study using the survey method was employed to gather the data. A longitudinal study is defined as "a research approach in which the researcher repeatedly collects and analyzes data over time" (Plano-Clark et al., 2014, p. 3), which was the case in this study. According to Remeny et al. (1998), there are a number of advantages to this type of research, including the fact that extended periods of study are usually necessary to observe medium- to long-term trends. A longitudinal study is more helpful for testing causality because it can track changes over time (Blumberg et al., 2011). However, several challenges are implicit in longitudinal study design as incomplete and interrupted follow-up of individuals, and attrition with loss to follow-up over time, difficulty in separation of the reciprocal impact of exposure and outcome, in view of the potentiation of one by the other, the potential for inaccuracy in conclusion if adopting statistical techniques that fail to account for the intra-individual correlation of measures and generally-increased temporal and financial demands associated with this approach (Caruana et al., 2015). A longitudinal study involves two groups, namely the panel group and cohort group. If the researcher studies the same group over time, it is called the panel group, and if the researcher uses different subjects, each sequenced measurement is known as a cohort group (Blumberg et al., 2011). In the present study, the data were collected from the same participants over time (the panel group). A pilot study was conducted in order to verify the survey's reliability and validity. Then, the researcher made adjustments and created the final survey. Of these, 2,400 surveys in total were distributed to employees (trainees) in three national oil and gas companies in Oman, with 800 surveys per stage distributed in each of the three companies.

The final stage of this study was to analyse the study findings using Structural Equation Modelling (SEM), which is comprised of measurement models that examine the unidimensionality, validity and reliability of latent constructs. These measurement models use confirmatory factor analysis (CFA). SEM was used to test the hypothesised relationships between the latent constructs. The research plan described in Figure 4.3 aimed to answer the research question outlined in Chapter 1.

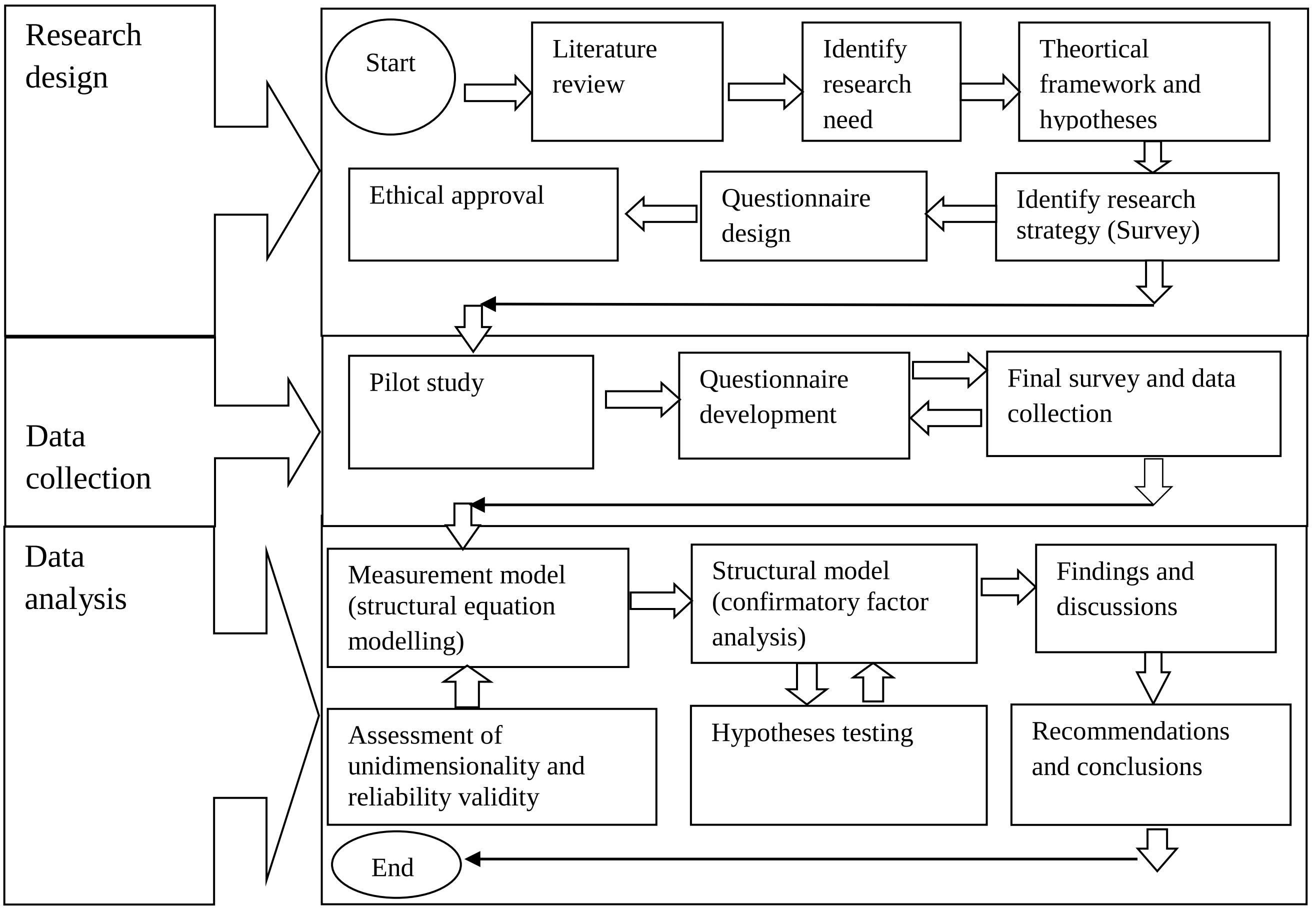


Figure 4.3 Research design

4.5 Research strategies

A research strategy is the methodological relationship between the data-collection and data-analysis methods (Saunders et al., 2016). Methods are defined as "the specific techniques and procedures used to collect and analyze data" (Scotland, 2012, p. 9). According to Remenyi et al. (1998), the research strategy provides the overall direction of the research, including the process by which the research is conducted. According to Amaratunga et al. (2002), each research strategy has its own approach to gathering and analysing empirical data. Therefore, it is critical to select an appropriate method for the specific research problem or phenomenon. Quantitative and qualitative methods are the main methods used to collect and analyse data in management and social science research (Saunders et al., 2016). Quantitative research uses experimental strategies (Collis and Hussey, 2014), such as surveys, structured interviews and structured observations (Saunders et al., 2016). Qualitative studies, on the other hand, often use action research, case studies, ethnography, grounded theory and narrative research (Saunders et al., 2016). With qualitative strategies, the researcher regularly communicates face-to-face with participants and observes their behaviours and actions within their context (Creswell, 2014). Various researchers (e.g. Bryman and Bell, 2015; Saunders et al., 2016) have described the distinction between qualitative and quantitative methods. Table 4.3 outlines the differences between qualitative and quantitative research.

Table 4.3 Comparison of quantitative and qualitative research

Area	**Quantitative**	**Qualitative**
Data description	Numbers	Words
Involvement of researcher	Neutral	Close
Ontological orientation	Objective	Constructionist
Epistemological orientation/ philosophy	Positivist	Interpretivist
Approach	Deductive/tests theory	Inductive/generates theory
Strategies	Surveys and experiments	Interviews and observations
Setting	Structured	Unstructured
Focus of finding	General understanding of participants' view point	In-depth understanding of participants' view point
Analysis type	Static	Process
Data characteristics	Hard/reliable	Deep data
Population	Large	Small

4.5.1 Justification for the quantitative research method

There are several reasons why quantitative research is the most suitable approach for this study. First, quantitative research follows a deductive approach allowing the 30 hypotheses to be examined to determine whether they are accepted or rejected. The deductive approach is the most suitable for testing a theory through an empirical investigation. A qualitative approach is not suitable for this study because it does not select and collect data first, and propose a new theory in the final stage.

Second, the epistemological orientation of this research is positivist, as illustrated in Table 4.3. This research approach uses quantitative research methods, such as facts and social phenomena (e.g., inadequate training evaluation in the oil and gas industry in Oman). Therefore, research was primarily undertaken to explore the effects of training characteristics on training effectiveness.

Third, this research aimed to duplicate, integrate and extend theories related to training evaluation, which were then used to develop hypotheses in order to examine the relationships between the independent and dependent variables. Therefore, the research study began by extensively reviewing the existing literature (see Chapter 2) to identify gaps in the research. Then, the research questions were identified and a conceptual approach was proposed in order to conduct an empirical examination.

Fourth, this research was based on a conceptual framework with a priori fixed relationships to determine whether the data supported the research hypotheses; therefore, the quantitative approach was the most appropriate to fulfil this purpose. This study's proposed measurement instrument for each of the seven constructs (pre-training interventions and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and training objectives) was employed to evaluate their effect on the expectations of training outcomes, expectations of trainer performance and behaviour, expectations of training environment, and actual training outcomes (reaction, learning, intention to transfer learning, behaviour and results). The proposed measurement instrument was drawn from previous studies and used to establish surveys and statistically test the findings.

Fifth, this empirical study set out to test the hypotheses developed in Chapter 3 (Sections 4.3–4.8). The data were collected from three surveys that were distributed to employees at three Omani oil and gas companies. Several studies have used surveys to collect data, such as Iqbal et al., (2011) who investigated the effect of training characteristics on reaction and learning. Furthermore, Ghosh et al., (2011) studied the effects of training characteristics on reaction, and Diamantidis and Chatzoglou (2012) examined the effects of training characteristics on learning and the usefulness of training. These studies used surveys because it was an efficient way to collect data and measure specific variables (Bovey and Hede, 2001). Likewise, a survey was chosen for this study because it could be distributed to a large number of people and was an economical instrument for collecting data.

Finally, the feelings and attitudes of individuals are frequently measured through surveys. Information about individual perceptions and attitudes related to organisational policies and management issues can be deciphered through a survey (Baruch and Holtom, 2008). According to Chen (2005), attitude measurement is involved in asking participants what they feel about a particular object, as well as what they believe about it. In the positivist approach, the attitudes of individuals are often measured using a Likert scale (Miller and Brewer, 2003) within the survey. Oppenheim (1992) argues that the reliability of the Likert scale tends to be good, partly because of the range of answers that are permitted with this format. Therefore, Likert scales were adopted in three of the questions in the survey used in this study.

In summary, a quantitative approach was selected for this research. Table 4.4 presents the overall philosophy, approach and strategy for the current research.

Table 4.4 Choice of research philosophy, approach, strategy, time horizon and collection method

Research philosophy	Positivism
Research approach	Deductive

Study type	Exploratory
Research strategy	Quantitative
Time horizon	Longitudinal studies
Data collection method	Survey

As stated above, a research design includes a number of research strategies, including the survey, experiment, archival research, case study, ethnography, action research and narrative inquiry (Saunders et al., 2016). In addition, Collis and Hussey (2014) recommend that a research strategy associated with quantitative research should comprise surveys and experimental research. The survey approach is considered the most appropriate technique, especially when social factors are identified and explored (Crotty, 1998). The section below provides an overview of the surveys and the reasons for adopting them.

4.6 Survey strategy

The survey is the most common research strategy adopted in business and management research (Saunders et al., 2012), and is generally used to gather data from a sample with the aim of analysing the data statistically and generalising the findings to a population (Collis and Hussey, 2014). This strategy is primarily linked with the deductive research approach (Saunders et al., 2012). It starts with a theory, which drives the proposed research hypothesis, and the hypothesis is subsequently accepted or rejected (Bryman and Bell, 2015). Furthermore, this strategy is often associated with the positivist philosophy, which is concerned with examining theory to develop an understanding of social reality (Collis and Hussey, 2014). The survey strategy consists of various sources of data, such as web-based and self-administered surveys, as well as telephone and face-to-face interviews. There are two categories of surveys: descriptive surveys and analytical surveys (Gray, 2017). Descriptive surveys are carried out either once or multiple times in order to represent a phenomenon accurately. An analytical survey ascertains whether there is a correlation between two variables or several variables (Collis and Hussey, 2014).

4.6.1 Survey

As stated above, the survey strategy is associated with quantitative research and involves surveys and experimental research (Saunders et al., 2012; Collis and Hussey, 2014). This research is exploratory and adopted to the survey strategy; therefore, it is suitable for collecting data in an economical way. It also saves time and is easy to design. This study used a survey as its primary data-collection method because interviews are difficult to schedule, result in a small sample, are never entirely anonymous and present the opportunity for subconscious bias and inconsistencies (Alshenqeeti, 2014). Surveys overcome this difficulty because the participants can choose the time and place to complete them.

The construction of a survey can vary based on what data-collection method is selected. The two main types of surveys are self-administered surveys (Bryman and Bell, 2015) and interview surveys (Saunders et al., 2016). In self-administered surveys, respondents complete the surveys themselves (Bryman and Bell, 2015). In interview-style surveys, the interviewer recodrs the responses of the participants (Saunders et al., 2016). Interview surveys include structured interviews and telephone surveys, and self-administered surveys include postal, web-based, intranet-mediated, and delivery and collection surveys (Blumberg et al., 2011; Easterby-Smith et al., 2008; Saunders et al., 2016). Web-based surveys are administered electronically using the Internet, while intranet-mediated surveys are electronically administered using an organisation's intranet (Saunders et al., 2012). This study used the self-administered survey because it had a lower cost, quicker administration time, less bias, offered the opportunity to include visuals and accessed respondents who could not be reached by phone (Blumberg et al., 2005; Bryman and Bell, 2015). Moreover, this study adopted two types of self-administered surveys (the paper and pencil-based survey, and web-based survey) to attain versatility, speed and cost effectiveness. The web-based survey is referred to as the "online survey" because it is conducted via the Internet (Bryman, 2016; Jansen et al., 2007). Web-based surveys generally improve data quality because validation checks can be incorporated with prompts that alert participants when they enter implausible or incomplete answers (van Gelder et al., 2010).

The researcher in the current study employed two different types of self-administered surveys. First, face-to-face contacts were made with managers by visiting national oil and gas companies in Oman. After identifying potential trainees who had been selected by managers, the researcher distributed the surveys among the employees. Some of the participants filled out the surveys at the time of distribution, and others dropped off their completed surveys with managers, and the researcher collected the surveys later. Alternatively, the researcher sent e-mails and phone messages with the web links of three surveys to the managers who forwarded the links to their employees, or the researcher sent the links directly to the participants who had provided their contact information.

4.6.2 Survey stages

It is essential to properly format a survey, which is done in five stages: (1) survey design, (2) pre-testing the survey, (3) modifying the final survey, (4) selecting the sample and data collection and (5) coding and analysing the data (Blair et al., 2014; Czaja and Blair, 2005). Survey design, pre-testing the survey and modifying the final survey will be explained later in section 4.9. Additionally, Flower (2013) proposed three steps for conducting a survey: (1) sampling, (2) data collection and (3) instrument development. Sampling is defined as taking a portion of the population, making observations about this smaller group and generalising the results to the larger population from which the sample was drawn (Burns and Burns, 2008). Data collection is a procedure through which information is gathered using an appropriate instrument, such as face-to-face interviews, telephone surveys or self-administered surveys. Since this research involved a longitudinal study, the data were gathered from the same group over time in order to study change and development over time (Gray, 2017). Therefore, the survey used in this study needed to be well designed to provide good information and answer the research question posed by the study. The next section provides further explanations about each of the three stages of this research: sampling, data collecting and employing the data methods (surveys).

4.7 Sampling strategies

A sample is defined as a "subset of those entities from which evidence is gathered" (Easterby -Smith et al., 2012, p. 222). The population in this research is trainees attending health and safety training programmes in the national oil and gas industry in Oman. It is almost impossible to gather and analyse data from all possible group partners or cases. It is also impractical to survey the whole population due to restrictions on time, budget and access. Moreover, using a small amount of cases creates a higher level of accuracy, and more time can be spent designing and piloting the data-collection methods. Therefore, the researcher needed to choose between two sampling techniques: probability (or representative) sampling and non-probability sampling. Probability sampling gives each case in the population a chance to be chosen, while non-probability sampling does not give all cases in the population a chance to be chosen. This study employs a non-probability sampling design that uses convenience sampling because this research is quantitative and focus on convenient elements that known or readily available to the researchers. A further explanation of each sampling type is provided below.

4.7.1 Types of sampling design

The sample design depends on the requirements of the research, its objectives and the funds available for the research (Blumberg et al., 2011). There are two types of sample design: probability sampling and purposive sampling (Teddlie and Yu, 2007). Selecting the appropriate sample design is essential for reducing bias in the selected sample, eliminating sampling errors and estimating the range of possible sampling (Blumberg et al., 2008). Probability sampling is employed in quantitative research, while purposive sampling is used in qualitative research (Gray, 2017). Probability samples aim to represent the whole population and include the choice of random samples of subjects from a specified population or from particular subgroups (strata) of a population (Teddlie and Yu, 2007; Gray, 2017). Probability sampling involves simple random sampling, systematic sampling, stratified sampling, cluster sampling, stage sampling and double sampling (Saunders et al., 2012; Gray, 2017). Non-probability sampling involves the selection of elements of a sample from a population that is unknown (Blumberg et al., 2011). Types of non-probability sampling include the convenience sample, purposive sample and snowball sample (Blumberg et al., 2011; Bryman and Bell, 2015). This research used non- probability sampling, especially the convenience random sample, to ensure easily accessible and willing to participate in a study. In addition, web-based surveys usually rely on convenience sampling (Preece et al., 2015). The following subsections provide detailed descriptions of the convenience sampling technique.

4.7.1.1 Convenience sampling

The convenience sampling is a type of non-probability that is simply available to the researcher by virtue of its accessibility (Bryman Bell, 2015; Etikan et al., 2016). Convenience sampling is defined as "the act, process, or technique of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population" (Emerson, 2015, p164). This sampling method involves drawing samples that are both easily accessible and willing to participate in a study (Teddlie and Yu, 2007). Based on this type of sample, the selection of members of the target population is based on particular criteria such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study (Dörnyei, 2007, Etikan et al., 2016; Pruchno et al., 2008). This sampling method is simple and easy to implement because it is convenient and it is easily accessible, and the accurate results in the population are homogeneous (Sedgwick, 2013; Dubey et al., 2017). Although its advantages, it has a higher likelihood of generating a biased sample so its study results cannot be generalized to a population (Fricker, 2012; Etikan et al., 2016; Mackey and Gass, 2015). Therefore, the convenience sampling should not be taken to be representative of the population (Mackey and Gass, 2015). Thus to overcome this difficultly, the characteristics of any sample obtained using convenience sampling must be well known in advance to determine how well the sample represents the population (Sedgwick, 2013). Also, the effect of outliers can be more devastating in non-probability sampling (convenience samples) because of the high self-selection possibility in non-probability sampling (Etikan et al., 2016; Farrokhi and Mahmoudi-Hamidabad, 2012).

There are two basic types of convenience samples which are captive samples and volunteer samples (Teddlie and Yu, 2007). Captive samples is a convenience sample taken from a particular environment where individuals may find it difficult not to participate (e.g. students in a classroom) while volunteer samples is another type of convenience sample in which individuals willingly agree to participate in a study (Teddlie and Tashakkori, 2009). This study has chosen volunteer samples as since this study asked the permission of the participants before involving them in participating in the research. Once the responders approve to contribute, the study proceeds; otherwise the study halts and other participants are sought.

4.7.1.2 Justification for adopting convenience sampling

This study uses the convenience sampling technique, which allowed the researcher to select a number of cases whose size depends on the participants' availability and ease of data collection. This technique consists of groups of individuals who are easily accessible to the researcher. Therefore it the most commonly used sampling approaches (Preece et al., 2015)

Samples of convenience are the most common sampling strategy in the field of management and business (Bryman Bell, 2015) and is frequently used in quantitative research (Etikan et al., 2016). The advantages of this method is that it is cheap, simple and easy to use and get rid of difficult way of doing a sample survey because it obtained by selecting convenient population units (Dubey et al., 2017; Farrokhi and Mahmoudi-Hamidabad, 2012; Robson, 2002) which was the case in this study. Furthermore, a convenience sample often meets purposive sample selection criteria that are relevant to the research purpose (Saunders et al, 2016). It is the convenience issues that have motivated the researcher to adopt this type of sample for the aim of this study. Therefore, it is reasonable to use convenience sampling in this study.

4.7.2 Sample size

Each study that employs a survey needs to account for the sample size (Blair et al., 2014), which is defined as "the number of entities included in a sample" (Easterby-Smith et al., 2012, p. 345). The sample size depends on the consideration of cost and time (Bryman and Bell, 2015). However, the employment of a survey requires selecting the largest sample size possible (Hussey and Hussey, 1997). A large sample better reflects the whole population with more precision than a small sample (Collis and Hussey, 2014; Easterby-Smith et al., 2012). A large sample is suggested because the positivist paradigm focuses on formulating hypotheses, establishing objective facts and discerning the relationship or causality between those facts (Collis and Hussey, 2003). Furthermore, conducting a statistical analysis requires a large sample size (Collis and Hussey, 2014). This research meets all of the criteria described above and employs SEM to analyse the proposed conceptual framework; therefore, it required a large sample size (Byren, 2001). Gorsuch (1983) recommends a minimum of five responders per construct and more than 100 participants per data analysis. Furthermore, the calculation sample should be 5% or more of the population (Blumberg et al., 2011). According to Harris and Schaubroeck (1990), a minimum sample size of 200 is appropriate to ensure robust SEM. SEM is also sufficient if the sample size is 250 or more and the missing data is less than 10% (Hair et al., 2010). The sample size of the current study is more than 250; therefore, SEM is appropriate. Kline (2005) suggested that a sample size exceeding 200 participants is needed for a very complex path model, and Gerbing and Anderson (1993) state that a sample of more than 200 is required to provide parameter estimates with any degree of confidence. Furthermore, SEM classifies the sample sizes as follows: 100 is poor, 200 is reasonable, 300 is good, 500 is very good and more than 1000 is excellent (Comrey and Lee 1992; Mvududu and Sink, 2013). Based on the above suggestions and assumptions, in this study, 800 surveys were distributed of each the three survey versions.

4.7.3 Target samples of this study

The respondents targeted by the three main surveys were employees of national oil and gas companies in Oman. Three companies were included in the sample of the present study. This study focuses on the Omani oil and gas industry because it remains a significant contributor to Oman's economy and is the core of Oman's manufacturing base. In 2015, it accounted for 33.9% of the country's gross domestic product (GDP), 78.7% of government revenues and 59.4% of goods exported. Furthermore, oil and gas extraction underpins many of the activities that Oman is keen on developing to diversify its economy, including the production of petrochemicals and aluminium, power generation and water desalination (Oxford Business Group, 2017). Furthermore, the oil and gas industry in Oman has a high rate of occupational accidents among employees including non-Omani as well as Omani employees, due to poor work environments and the poor implementation of accident prevention strategies (Al-Rubaee and Al-Maniri, 2011). It seems that inadequate safety training among employees in the oil and gas industries is the root cause of accidents because employees do not have sufficient knowledge or skills to recognise potential hazards in the workplace or in the organisation. To meet the requirements of the SEM technique (Chumney, 2013), a large sample of the population was selected from all levels of employees in the Omani oil and gas industry who attended health and safety training. The current study was longitudinal and the data were gathered appropriately using the survey method, which covered a rather large population of the sample.

4.7.4 Justification for employing a longitudinal study in this research

A longitudinal study is applied in this research where all the data are collected at several times from a convenience sample of people who responded to three surveys that were distributed before training, immediately after completed training and two to three months after training. Section 4.4 provides further detail about a longitudinal study. A longitudinal study is more helpful when testing causality because it can track changes over time and observes medium- to long-terms trends (Blumberg et al., 2011; Remeny et al., 1998). Hence, a longitudinal design for this study is useful to understand the relationships between training characteristics and training outcomes before and after training is completed.

4.8 Data collection

The data-collection procedures involved gathering opinions and useful information from the target population using surveys (Churchill, 1987). The survey is the most popular data-collection method and allows the researcher to gather standardised data from a sizeable population at a low cost in a minimum amount of time (Saunders et al., 2016). The researcher began the procedures by contacting a convenient sample of the population to verify their willingness to take part in the study and answered any questions about the instrument and privacy. After gaining permission from the organisations that were selected to participate in the research, a set of one survey were conducted per stage, and a covering letter was prepared by the author of the study and delivered to the participants through personal visits or web links that were delivered by email or phone. The contact and address details of the employees (participants) who were identified as potential health and safety trainees in the organisation (sample) were obtained from managers or human resource managers. This information was also collected from training centres in organisations and through personal visits to companies in order to assist with the distribution of the surveys. This empirical research was undertaken from June 2016 to October 2016. Out of more than 300 companies that operate in the oil and gas industry in Oman (Oxford business group, 2011), three national oil and gas companies located in Muscat, participated in this study. Those three companies were selected based on the location of their headquarters in Muscat, the capital of Oman. The other criteria for selection was, their willingness to participate in this study in the research with convenience of getting data through the well-known people. The target respondents were all levels of employees range from senior managers to the field workers in the Omani oil and gas industry who attended health and safety training.

The data were collected in three stages: before training, immediately after completion of training and two to three months after training. The first page of each of the three surveys comprises a cover letter which includes information about confidentiality so participants had the right to withdraw from the study at any time without any obligation. The first survey was distributed to trainees before their health and safety training was set to begin. In this stage, the researcher distributed and collected surveys, and also the researcher contacted managers to remind them to distribute and collect the surveys from the respondents four weeks before the training began. A second survey was given to the trainees immediately after they completed the training. The final survey was distributed two to three months after the training was completed. This process was followed for each questionnaire. The researcher collected the paper surveys and contacted managers to collect surveys from participants who had not returned their survey 15 days after distribution. Moreover, the initial e-mail, which included a survey web link, was sent to managers who were asked to send it to those participants who had not yet completed the paper survey. After a week, the first follow-up e-mail was sent to training managers to send to respondents who had not replied. The second follow-up e-mail was sent after two weeks and the last e-mail was sent a week later to remind participants to fill in the survey. After a third reminder, those who did not respond were excluded from the research. The researcher ended Survey 1 (before training) four weeks after the first distribution, Survey 2 (immediately after completion of training) eight weeks after the first distribution and Survey 3 (two to three months after completion of training) eight weeks after the first distribution.

Despite problems in collecting the data, such as, finding a convenient time to collect the data simultaneously from three Omani national oil and gas companies, the final response rate for the three surveys were 50.75% (before training), 50.25% (immediately after completed training) and 48.87% (2–3 months after completed training), which are satisfactory for the research. Using a mixed mode for distributed surveys has no negative effect on the response rate if a single mode is used to prompt completion by another mode (Dillman, 2007). In this study a web-based survey was used to increases the response rate of this research. The following section provides a detailed account of the development process for the survey used in this study.

4.9 The survey development process

A survey is suitable for data collection when the researcher can predict the answers that they are likely to receive (Zikmund et al., 2009). For this quantitative study, the researcher designed a survey to collect data with the aim of answering the research question and objectives. The term 'survey' is defined as a careful list of structured questions, selected after considerable testing, with the aim of eliciting accurate responses from a selected sample (Hussey and Hussey, 1997). Furthermore, the survey is referred to as "a reformulated written set of questions in which respondents record their answers" (Sekaran 2003, p. 236). On the other hand, conducting a survey entails much more than simply designing a set of questions and collecting data (Gray, 2017). The survey in the current study was developed in five steps, which were based on the research question and aims (Blair et al., 2014; Collis and Hussey, 2014; Gray, 2017), as explained below:

1. **Survey design and preliminary planning:** This step involved choosing the research goals and determining ways to accomplish them within a certain timeframe and with the available resource. The specific information required, the sample and the survey technique were determined based on the research objectives (Bajpai, 2011).

2. **Questionnaire design and pretesting:** Designing a survey involves various decisions regarding the question format, relevance and wording, sequencing, response choice, question layout and first round of producing the survey (Bajpai, 2011). Pre-testing the survey also includes testing or piloting certain elements, such as the sampling frame, survey questions and data collection tools (Gray, 2017). The aim of this stage is to determine whether the survey

works in the manner intended by the researcher, and whether it provides valid and reliable measurements of the participants' attitudes, behaviours and attributes (Blair et al., 2014).

3. **Final survey design and planning:** This stage tells the researcher what adjustments need to be made to the various elements, such as the choice and size of the sampling frame, the survey itself or interviewer training, data coding and plans for data analysis (Gray, 2017). Accordingly, the researcher will pre-test the survey, revise the survey based on the results of the pre-test, revise the final survey, administer the survey and finally obtain responses (Bajpai, 2011).

4. **Sample and data collection:** This includes collecting data from the field and target sample. In this stage, the researcher aims to monitor the rate of completed interviews or surveys (Gray, 2017).

5. **Data coding, data file construction, analysis and final report:** This stage includes converting raw data that were collected from the research context into data that are ready to analyse (Bajpai, 2011). In the coding and file-construction stage, a number is assigned to the responses from each survey question and are then entered into a data record that includes all the responses from one participant. Each participant is represented by a unique identity number (Gray, 2017). Finally, the data are screened and cleaned before the data are analysed and the final report is generated (Bajpai, 2011; Gray, 2017).

4.9.1 Survey design

Designing a good survey requires both artistic and scientific skill (Zikmund et al., 2009). Survey design includes how questions are worded, categorised, scaled and coded, as well as the general appearance of the survey (Sekaran, 2003). A survey should be designed in order to deliver precise answers (Sekaran, 2003) to the research questions. In this study, the three surveys were constructed so that the participants were encouraged to respond. The author made significant effort to ensure that the questions were easy to read and understand, thus reducing the chance for misunderstanding and enhancing the participants' interest in the subject matter.

A stated above, the surveys were provided personally and electronically by mail and web-based survey, which increased the response rate (Fricker, 2017). Yun and Trumbo (2000) show that using multi-mode survey techniques improves the representativeness of the sample without biasing the other results. Self-administered, online surveys have become more popular in recent years. There are several reasons to use a web-based survey, including faster response, quick distribution and delivery, fewer required resources, quality of data, lower delivery cost, more design options and less data-entry time (Yun and Trumbo, 2000; Fan and Yan, 2010; Andrews et al., 2003). Although web-based surveys have certain advantages, several requirements should be considered when designing this type of survey.

Web-based surveys have to be designed carefully to support different browsers, various platforms and processors, and a wide range of monitors, as well as preventing multiple submissions (Yun and Trumbo, 2000). The questions in the web survey should be presented in a logical or adaptive manner (Kehoe and Pitkow, 1996) and provide the participants with multiple opportunities to save their completed answers (Smith, 1997). Furthermore, web-based surveys must include a mix of multiple choice and narrative-style questions (Yun and Trumbo, 2000) and conclude with a feedback and "thank-you" section (Smith, 1997).

Good design and appropriate length reduce the occurrence of sample survey error and influence the quality of responses (Dillman et al., 1999; Ganassali, 2008). Developing a web-based survey involves three elements: length, intensity and wording (Ganassali, 2008). The length of the survey is referred to as the amount of time it takes a participant to complete a survey, or number of pages or number of items in a survey (Dillman, 2007; Galesic and Bosnjak; 2009; Hugick and Best, 2008). The response rate is assumed to be lower with longer surveys (Dillman, 2007; Galesic and Bosnjak; 2009; Rolstad et al., 2011). On the other hand, previous studies have observed that survey length has an inconsistent effect on the response rate (Mond et al., 2004).

The survey length could be determined by number of pages or the ideal time to complete it to get a sufficient response rate. Hoffman et al., (1998) showed that the response rates for a four-page survey were similar to those obtained with a 16-page survey. Meanwhile, Kalantar and Talley (1999) found that the final response rates were higher among those receiving a short survey (four pages) than a long survey (seven pages). Saunders et al., (2016) find that the length of a survey (four–eight A4 pages) is acceptable for within-organisation and self-administered surveys. Similarly, Rolstad et al., (2011) conducted a meta-analysis that showed the response rates were lower for longer surveys. Handwerk et al., (2000) find 10–15 minutes is the ideal time for a survey regardless of the format. Using up to a 12-page mail survey and web surveys consisting of between 50 and 60 individual pages has no adverse effect on response rates (Dillman et al., 2014). Therefore, this study used three 10-minute long surveys that were up to 10 pages each.

The intensity of the illustrations in a web-based survey refers to the visual aspects of the survey (Ganassali, 2008). There is wide variety of issues to consider when displaying a web-based survey, including screen-by-screen or scrolling survey layouts, fonts, backgrounds, logos, graphics, progress indicators, navigational instructions, radio buttons, check boxes, drop-down boxes and full list boxes (Fan and Yan, 2010). Dillman et al., (1998) suggest that the visual design of a web-based survey influences the response rate. Couper et al., (2001) find that design has a systematic effect on the behaviour of respondents in web surveys. Clarkberg and Einarson (2008) show that the visual design elements of a web-based survey, such as the borders and spacing used in questions and the number of questions presented per page, elicit strong reactions from participants.

The first page (welcome page) of a web-based survey should include a cover letter that includes the title of the survey, a brief description of its purpose and instructions on how to answer questions, and information about confidentiality and contact information that can be used if the respondents have questions. The last page should include a message that tells the respondents they have completed the survey and thanking them for the time they took to answer the questions (Dillman, 2007; Dillman et al., 2014). This study followed all of these guidelines.

This thesis used three web-based surveys (Figures 4.5–4.7 and Appendix B). Survey 1 was nine pages (32 items), Survey 2 (61 items) was 10 pages and Survey 3 was seven pages (24 items). Based on the approximate value produced by the website www.surveymonkey.com, each of the three surveys took an average of 10 minutes to complete. The first page of each of the three surveys included the title of the research and approximately eight lines of text explaining the main objectives of the study, offering broad guidelines for filling in the questions and reinforcing confidentiality. The last pages of Surveys 1 and 2 provided textboxes where the respondents could provide their e-mail addresses or phone numbers if they wished to complete the next survey or receive a summary of the study when it was finished. Finally, all three surveys concluded with words of gratitude for the respondents' valuable support. The web versions of all three surveys were as similar to the paper version as possible (see Appendix B).

4.9.2 Question design

The fundamental purpose of data collection is to gather the opinions and beliefs of participants regarding the research topic. Thus, the question development process followed good practices in question design, such as clear terms, simple and short questions, and the avoidance of double-barrelled and leading questions (Bryman and Bell, 2015; Collis and Hussey, 2014; Ghauri and Gronhaug, 2002). In addition, the contents of the survey were delivered in simple, plain language, which supported the complete answers. The design of a question includes the type of question, wording, and response validity and reliability (Collis and Hussey, 2009).

The general rules related to designing questions, as recommended by several researchers (e.g., Collis and Hussey, 2009; Hussey and Hussey, 1997; Cooper and Schindler, 2012), were used when writing the content of the surveys. For instance, the wording needed to be familiar to the respondents; therefore, the researcher tried to avoid words that might be confusing to the participants. Furthermore, the wording was short and simple, and ambiguous questions were avoided. These guidelines were followed carefully to ensure valid responses from the participants. Moreover, involving experts in the design of the survey was essential to improve it. In addition, the literature review helped to establish the content of the survey, reduce bias, reduce errors and obtain a sufficient response.

The principles of designing a paper survey also apply to designing a web-based survey (e.g., keeping questions simple, avoiding biased and vague questions (Andrews et al., 2003). For web-based surveys, poor wording will reduce the motivation of the respondents and cause them to discontinue the survey (Fan and Yan, 2010) in addition to providing skewed results (Gonzalez-Basandñale and Adam, 2007). Dillman et al., (1999) propose 11 principles for constructing web-based surveys that range from whether respondents should be required to answer a question before moving on to the next, to the general format for presenting questions on a computer screen. These guidelines were followed when writing the web-based survey for this study. For example, it used previously developed surveys and scales, the same set of demographical questions as all surveys, it was as short as possible, it used as few answer types as possible and the answer types were consistent (Kaczmirek, 2005). As a result, both types of surveys were easily understood by trainees who were undergoing health and safety training in Omani national oil and gas companies.

4.9.3 Response strategies and question types

The surveys used in this study included structured questions (closed-ended) and scaled/rating questions. The author integrated some closed-ended and scaled formats to motivate the participants to respond, to gather all types of data (Blumberg et al., 2005) and to enhance the comparability of the responses (Bryman and Bell, 2015). In a web-based survey, the graphical presentations of the response formats do influence the answers to the survey (Ganassali, 2008).

This study mainly used structured questions (closed-ended), which identified several responses in a list within a limited space (Collis and Hussey, 2014). This format established clear meaning and was easy to complete, in addition to being simple to code and analyse, and inexpensive to administer (Blumberg et al., 2008; Bryman and Bell, 2015; Collis and Hussey, 2014).

The scaled/rating questions were often used with the Likert scale that shows the participants' levels of agreement with a statement (Collis and Hussey, 2014). A Likert scale is defined as a "summated rating scale whereby an individual's score on the scale is a sum, or average, of the individual's responses to the multiple items on the instrument" (Warmbrod, 2014, p. 31). A Likert scale with five categories was used, and the questions were categorised by topic and put in a logical order. The funnel approach was adopted, starting with common questions and narrowing in scope as the survey progressed (Churchill, 1987).

4.9.3.1 Justification for employing the Likert scale in this study

A Likert scale with five response categories, including a neutral mid-point, was used in this research. This method assesses a participant's attitude by providing a range of responses to a given question or statement (Subedi, 2016). It is also easy for the respondent to answer these questions, and is easy to administer and score (Dolnicar et al., 2011; Subedi, 2016). Revilla et al., (2016) find that five-point scales yield better quality data than point scales. On the other hand, using a Likert-type scale is a matter of debate in terms of the analysis and inclusion of points on the scale (Joshi et al., 2015). For example, Preston and Colman (2000) find that using scales of seven, nine or even 11 points significantly increases the reliability and validity of data compared to scales of two, three or four points. On the other hand, Dawes (2002) revealed that reliability and validity change slightly when a seven-point Likert scale is used compared to a five-point Likert scale. According to Hartely and Mclean (2006), the five-point Likert scale does not decrease the response rate in any research. Dawes (2002) shows that using an 11-point scale produces the same mean score as a five-point scale. Furthermore, Daws (2007) finds that the rescaled five-point and seven-point scales generate higher mean scores compared to the 10-point format. Daw also reveals that the calculated results of the kurtosis and the skewness of the five-point and 11-point scales were not noticeably different. Research confirms that data from the Likert items (and those with similar rating scales) become appreciably less accurate when the numbers of points are below five or above seven (Johns, 2010). Nevertheless, Mertler (2009) recommends using a five-point scale, especially when an attitudinal study is being carried out, this was the case in this study.

4.9.4 Developing the survey in this study

This research focuses on the evaluation of training effectiveness, which is affected by different variables that influence training outcomes. Therefore, a conceptual framework was developed to investigate the factors that affect training effectiveness. More specifically, this research focuses on the impact of training characteristics on training outcomes, namely reaction, learning, intention to transfer learning, behaviour and results. Finally, this study investigates the moderating effect of these factors on the relationship between those training outcomes.

As discussed above in section 4.4 and 4.7.4, a longitudinal study is applied in the current research where all the data are collected at several times from a convenience sample of people who responded to three surveys that were distributed before training, immediately after completed training and two to three months after training. Each survey was accompanied by a covering letter that explained the purpose of the study and ensured confidentiality. The participants were told that the research was being conducted to explore their perceptions of training effectiveness and that participation in the survey was voluntary. They were further informed that they had the right to withdraw from the study at any time without any obligations. Additionally, the respondents were provided with the researcher's contact information (e-mail address) so they could ask questions. At the end of Surveys 1 and 2, the respondents were asked to provide optional contact information (phone number or e-mail address) so they could be reached to complete Surveys 2 and 3, and so they could be informed of the results if they wished. This also encouraged them to participate in the surveys that followed. Each of the three surveys consisted of the following sections.

4.9.4.1 Survey 1 (before training)

Survey 1 (before training) had three parts:

Part 1 of Survey 1 (Q1–7) was concerned with the participants' demographic information regarding personal attributes and general background (Appendix B).

Part 2 was composed of two sub-parts. Part 2A consisted of four items (Q1–4) that provided information about the general features of pre-training, such as type of training, length of notice before training time, regularity of training and methods of being informed about training. Part 2B included two items (Q1–2) that provided information about the expectations of training outcomes.

Part 3 was composed of 22 items (Q1–9), which provided information about training characteristics (e.g., pre-training interventions and practices, and trainee readiness). It also provided information about the expectations of the training environment, expectations of trainer performance and behaviour, and expectations for training outcomes.

Table 4.5 Items related to research hypotheses and variables in Survey 1(before training)

Hypotheses	Variables	Part, Relevant Questions
Participants' demographic background	Demographics	Part 1, Q1–7
General background of training features of pre-training	Training features	Part 2A, Q1–4
H1a Pre–training interventions and activities have a significant positive relationship with expectations for training outcomes.	Pre-training interventions and activities	Part 2B, Q1–2 and Part 3,Q1, Q8–9
H1b Pre-training interventions and activities have a significant positive relationship with expectations of the training environment.		Part 3, Q1 and Q3–6
H1c Pre-training interventions and activities have a significant positive relationship with expectations of the trainer's performance and behaviour.		Part 3, Q1 and Q7
H2a Trainee readiness has a significant positive relationship with expectations for training outcomes.	Trainee readiness	Part 2B, Q1–2 and Part 3, Q2, Q8–9
H2b Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour.		Part 3, Q2 and Q7

H2c Trainee readiness has a significant positive relationship with expectations of the training environment.		Part 3, Q2 and Q3–6

4.9.4.2 Survey 2 (immediately after training)

Survey 2 (immediately after training) had three parts:

Part 1 of Survey 2 (Q1–7) was concerned with the participants' demographic information, such as personal attributes and general background (Appendix B).

Part 2 was composed of six items (Q1–2) that provide information on the general features of training after it is completed, such as training methods and trainer performance and behaviour.

Part 3 was composed of two sub-parts. Part 3A is composed of 10 items (Q1–2) that provide the information about the training facilities and training methods. Part 3B was composed of 35 items (Q1–15) about training characteristics (i.e., training environment, training methods, trainer performance and behaviour, training content and training objectives), as well as training outcomes (reaction, learning and intention to transfer learning).

Table 4.6 Items related to hypotheses and variables in Survey 2 (immediately after training)

Hypotheses	**Variables**	**Part, Relevant Questions**
Participants' demographic background.	Demographics	Part 1, Q1–7
General features of training after it was completed.	Training features	Part 3A, Q1–2
H3 Reaction has a significant positive relationship with learning.	Reaction	Part 3B, Q7–Q9, Q15 and Q10–12
H4 Learning has a significant positive relationship with intention to transfer learning.	Learning	Part 3B, Q10–12 and Q13–14
H5a The training environment has a significant positive relationship with reaction.	Training environment	Part 3B, Q1–4 and Q7–Q10
H5b The training environment has a significant positive relationship with learning.		Part 3B, Q1–4 and Q11–13
H5c The training environment has a significant positive relationship with intention to transfer learning.		Part 3B, Q1–4 and Q14–15
H6a Training methods have a significant positive relationship with reaction.	Training methods	Part 2, Q1; Part 3B, Q5 and Q7–Q10
H6b Training methods have a significant positive relationship with learning.		Part 2, Q1; Part 3B, Q5 and Q11–13
H6d Training methods have a significant positive relationship with intention to transfer learning.		Part 2, Q1; Part 3B, Q5 and Q14–15
H7a Trainer performance and behaviour have a significant positive relationship with reaction.	Trainer performance and behaviour	Part 2, Q2; Part 3.B, Q8 and Q7–Q10
H7b Trainer performance and behaviour have a significant positive relationship with learning.		Part 2, Q2; Part 3B, Q6 and Q11–13
H7c Trainer performance and behaviour have a significant positive relationship with intention to transfer learning.		Part 2, Q2; Part 3B, Q6 and Q14–15
H5d The training environment moderates the relationship between reaction and learning.		Moderation effect
H5e The training environment moderate the relationship between learning and intention to transfer learning.		Moderation effect
H6d Training methods moderate relationship between reaction and learning.		Moderation effect
H5e Training methods moderate the relationship between learning and intention to transfer learning.		Moderation effect
H7d Trainer performance and behaviour moderate the relationship between		Moderation effect

reaction and learning.	
H7e Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.	Moderation effect

4.9.4.3 Survey 3 (2–3 months after training)

Survey 3 (2–3 months after training) had three parts:

Part 1 of Survey 3 (Q1–7) was composed of demographic questions about the participants' personal attributes and general background (Appendix B).

Part 2 of Survey 3 is composed of three items (Q1–3) that provided information on the general background of training characteristics (training content and training objectives), as well as the training outcomes (behaviour).

Part 3 is composed of 15 items (Q1–10) that provided information on the training characteristics (training content and training objectives) and training outcomes (behaviour and results).

Table 4.7 Items related to hypotheses and variables in Survey 3 (2–3 months after training)

Hypotheses	Variables	Part, Relevant Questions
Participants' demographic background.	Demographics	Part 1, Q1–7
H8 Behavioural change has a significant positive relationship with results.	Behavioural change	Part 2, Q1; Part 3, Q8 and Q9
H9a The training content has a significant positive relationship with behavioural change.	Training content	Part 2, Q2; Part 3, Q1–5 and Q8
H9b The training content has a significant positive relationship with results.		Part 2, Q2; Part 3, Q1–5 and Q9
H10a The training objectives have a significant positive relationship with behavioural change.	Training objectives	Part 2, Q3; Part 3, Q6–7 and Q8
H10b The training objectives have a significant positive relationship with results.		Part 2, Q3; Part 3, Q6–7 and Q9
H9c The training content moderates the relationship with behavioural change and results.		Moderation effect
H10c The training objectives moderate the relationship with behavioural change and results.		Moderation effect

The three survey items are related to the variables that were used to develop the hypotheses explored in this study, as shown in Tables 4.5–4.7. The items in the three surveys were used to obtain information about the variables so that they could provide evidence to support or reject the hypotheses. The items concerned with the participants' demographic information were similar in all three surveys.

4.10 Measurement scales

The scales used in the present research were nominal and ordinal. The nominal scales were limited to questions regarding respondents' demographic characteristics, such as gender, and the ordinal scales were used for qualifications, level of work and so on. The Likert scale was employed (Bryman and Bell, 2015) in questions that investigated the participants' beliefs and opinions towards evaluating training effectiveness. A five-point Likert scale was selected for this research where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. Both positive and negative questions were used to ensure that the participants read the questions carefully and thought about their answers (Saunders et al., 2016). Survey 2 also included questions with "yes" or "no" answers. The forced-choice response "yes" or "no" format is generally straightforward for respondents to answer and for the researcher to code (Callegaro et al., 2014). The forced-choice "yes"/"no" response format encourages participants to look at every item because an answer is required for each one (Nicolaas et al., 2015).

Tables 4.5–4.7 illustrated the scale development and hypothesised relationship techniques used in this research. The measurements were drawn from the existing literature. Fiftteen constructs (expectations of the training environment, expectations of trainer performance and behaviour, expectations for trining outcomes, reaction, learning, intention to transfer learning, behaviour, results, pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and training objectives) were formed along with the measurements.

In this study, the independent variables for Survey 1 were pre-training intervention and activities and trainee readiness. Expectations of the training environment and expectations of trainer performance and behaviour and expectations for training outcomes were the dependent variables.

In Survey 2, the independent variables were training environment, training methods, trainer performance and behaviour. Reaction, learning and intention to transfer learning were the dependent variables, where learning was dependent on reaction and intention to transfer learning was dependent on learning.

In Survey 3 (2–3 months after training), the independent variables were training content and training objectives, and behaviour. The results varible was the dependent variable, where results varible was dependent on behaviour.

4.10.1 Operationalisation of the variables

As illustrated in table 4.5, 4.6 and 4.7, theoretical constructs were employed, and the adapted items were taken from the prior literature. The adapted items were validated, and wording changes were made to fit the instrument. The operationalisation of the three survey items for each construct is explained below. Operationalisation is defined as the translation of concepts into indicators to be measured empirically (Saunders et al., 2016).

4.10.1. 1 The operationalisation of the variables in Survey 1 (before training)

This section describes the operationalisation of the variables in Survey 1 (before training).

The operationalisation of pre-training interventions and activities

The operationalisation of pre-training interventions and activities was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on three items that were adopted and adapted from Xiao (1996), Clemenz (2001), Lee and Li (2008), Miller (2002), and Simonsen and Reyes (2003), as shown in Table 4.8.

Table 4.8 Survey 1(before training)

Constructs	Item code	Measurement items	Adapted from
Pre-training intervention and activities (PTA)	PTA1	1- I was informed well in advance of the training methods to be used	Xiao (1996), Clemenz (2001), Lee and Li (2008), Miller (2002) and Simonsen and Reyes (2003)
	PTA2	1- I was informed well in advance of the topics to be covered.	
	PTA3	2- I was informed well in advance of the training objectives to be achieved.	
Trainee readiness (TR)	TR1	1- I was knowledgeable and competent in health and safety before attending this training.	Clemenz (2001), Rae (2004)
	TR2	2- I feel that I need this training.	
Expectatios for training outcomes (ETO)	ETO1	1- I expect the health and safety training will improve my job performance.	Xiao (1996), Clemenz (2001), Facteau et al., (1995), Holton et al. (2000), Miller (2002)
	ETO2	2- I expect the health and safety training will be highly relevant to my daily work tasks.	
	ETO3	3- After the training today, I expect to be able to deal more effectively with health and safety issues at work, such as as accidents and emergency response.	
	ETO4	4- After the training today, I expect to be able to deal more effectively with health and safety issues at work, such as chemical and hazardous materials safety.	
	ETO5	5- After the training today, I expect to be able to deal more effectively with health and safety issues at work, such as personal protective equipment.	
	ETO6	6- Based on the announcement of what I will get from this training, I expect to be able recognise unsafe working practices.	
	ETO7	7- Based on the announcement of what I will get from this training, I expect to increase my awareness about health and safety issues.	
	ETO8	8- Based on the announcement of what I will get from this training, I expect to gain the ability to deal with safety problems at work.	
	ETO9	9- Based on the announcement of what I will get from this training, I expect to be able to promote proper safety procedures while I am on the job.	
Expectations of training environment (ETE)	ETE1	1- I expect a well-equipped training environment.	Clemenz (2001), Lee and Pershing (2002)
	ETE2	2- I expect a comfortable physical training environment.	
	ETE3	3- I expect food and drinks/refreshments, a meal, etc.	

	ETE4	4- I expect the training facilities to be used.	
Expectations of trainer performance and behaviour (ETPB)	ETPB1	1- The trainer should be a good communicator.	Morgan and Casper (2000), Miller (2002), Knowles (1980)
	ETPB2	2- The trainer should be knowledgeable about the content.	
	ETPB3	3- The trainer should be able to respond to the participants' questions.	
	ETPB4	4- The trainer should give the trainees useful feedback on their progress.	
	ETPB5	5- The trainer should be very organised and well prepared for the course	
	ETPB6	6- The trainer should use teaching aids effectively.	

Operationalisation of trainee readiness

The operationalisation of trainee readiness was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on two items that were adopted and adapted from Clemenz (2001) and Rae (2004), as indicated in Table 4.8.

Operationalisation of the expectations for training outcomes

The operationalisation of the expectations for training outcomes was measured using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on nine items that were adopted and adapted from Xiao (1996), Clemenz (2001), Facteau et al., (1995), Holton et al., (2000) and Miller (2002), as illustrated in Table 4.8.

Operationalisation of expectations of the training environment

The operationalisation of expectations for the training environment was measured using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on four items that were adopted and adapted from Clemenz (2001) and Lee and Pershing (2002), as shown in Table 4.8.

Operationalisation of expectations of trainer performance and behaviour

The operationalisation of expectations of trainer performance and behaviour was measured using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on six items that were adopted and adapted from Morgan and Casper (2000), Miller (2002) and Knowles (1980), as indicated in Table 4.8.

Table 4.9 Survey 2 (after completed training)

Constructs	Item code	Measurement items	Adapted from

Training environment (TE)	TE1	1- I was very satisfied with the suitability of the following elements of the physical training environment during this course: training rooms, classrooms, etc.	Lee and Pershing (2002), Rae (2004)
	TE2	2- I was very satisfied with the suitability of the following elements of the physical training environment during this course: food and drinks/refreshments, meals, etc.	
	TE3	3- I was very satisfied with the suitability of the following elements of the physical training environment during this course: lodging and leisure facilities.	
	TE4	4- The physical training environments used during the training were well equipped: training room or classroom.	Lee and Pershing (2002), Rae (2004)
	TE5	5- The physical training environments used during the training were well equipped: food and drink/refreshments, meals, etc.	
	TE6	6- The physical training environments used during the training were well equipped: lodging and leisure facilities.	
	TE7	7- The training environment enabled me to get the maximum value from this course.	Rea (2004)
	TE8	8- The following elements of the training facilities were the most helpful for learning: audio-visual equipment, e.g., overhead projector.	Burke and Baldwin (1999), Lim (2000), Lee and Pershing (2002), Morgan and Casper (2000), Rea (2004)
	TE9	9- The following elements of the training facilities were the most helpful for learning: audio-visual equipment, e.g., flipchart.	
	TE10	10- The following elements of the training facilities were the most helpful for learning: audio-visual equipment, e.g., video.	
	TE11	11- The following elements of the training facilities were the most helpful for learning: audio-visual equipment, e.g., PowerPoint slides.	
	TE12	12- The following elements of the training facilities were the most helpful for learning: other training aids (please specify): _______________	
Training methods (TM)	TM1	1- The training methods listed below were highly suitable: class lecture/teaching.	Morgan and Casper (2000), Simonsen and Reyes (2003)
	TM2	2- The training methods listed below were highly suitable: case study	
	TM3	3- The training methods listed below were highly suitable: simulation.	
	TM4	4- The training methods listed below were highly suitable: games.	

	TM5	5- The training methods listed below were highly suitable: other methods (please specify): _______________	
	TM6	6- I was very satisfied with the following elements of the training methods used to deliver the course material: class lecture/teaching.	Morgan and Casper (2000), Simonsen and Reyes (2003)
	TM7	7- I was very satisfied with the following elements of the training methods used to deliver the course material: case study.	
	TM8	8- I was very satisfied with the following elements of the training methods used to deliver the course material: simulation.	
	TM9	9- I was very satisfied with the following elements of the training methods used to deliver the course material: games	
	TM10	10- I was very satisfied with the following elements of the training methods used to deliver the course material: other methods (please specify): _______________	
Trainer performance and behaviour (TPB)	TPB1	1- The trainer's performance and behaviour were of a very high standard.	Burke and Baldwin (1999), Morgan and Casper (2000)
	TPB2	2- The trainer for this course: had good communication skills.	Simonsen and Reyes (2003) , Knowles (1980), Olson (1994), Towler and Dipboye (2001), Rae (2004)
	TPB3	3- The trainer for this course: gave me useful feedback on my progress.	Komaki (1980), Olson (1994), Burke and Baldwin (1999), Wlodkowski et al. (2008)
	TPB4	4- The trainer for this course: answered the trainees' questions.	Knowles (1980), Olson (1994), Morgan and Casper (2000)
	TPB5	5- The trainer for this course: kept the interest of the learners during the training sessions.	Morgan and Casper (2000), Clemenz (2001)
	TPB6	6- The trainer for this course: was very organised and well prepared for the course.	Clemenz (2001), Rae (2004), Iqbal et al., (2011)
	TPB7	7- The trainer for this course: had teaching methods and materials that encouraged me to gain new knowledge and skills.	Knowles (1980)
	TPB8	8- The trainer of this course: Used teaching aids effectively.	Grabowski (1976), Jacobs (1987), Olson (1994), Lim (2000)
	TPB9	9- The trainer for this course: was always present for the training.	Morgan and Casper (2000)
Reaction (R)	R1	1- I feel that this training was highly effective.	Morgan and Casper (2000), Rea (2004)
	R2	2- The tasks and exercises of the training session were relevant to my work tasks.	Burke and Baldwin (1999), Morgan and Casper (2000), Warr et al. (1999)
	R3	3- I found it difficult to follow this course.	Warr et al., (1999), Lim (2000)
	R4	4- I acquired new knowledge of and good skills in health and safety from this course.	Facteau et al. (1995), Morgan and Casper (2000), Rea (2004)
learning (L)	L1	1- I learned a lot from this course.	Morgan and Casper (2000)
	L2	2- I have forgotten most of what I learned	Lim (2000), Rea (2004), Velada et

		from this training programme.	al., (2007)
	L3	3- I remember most of what I learned in this training programme.	Rea (2004), Velada et al., (2007)
Intention to transfer learning (ITL)	ITL1	1- I think I will do things differently when I go back to work after this training.	Tracey et al. (1995), Lee and Pershing (2002), Rea (2004)
	ITL2	2- I feel that I can apply what I learned in the workplace.	Morgan and Casper (2000), Rea (2004)

4.10.1.2 Operationalisation of the variables in Survey 2 (immediately after training)

This section describes the operationalisation of the variables in Survey 2 (immediately after training).

Operationalisation of the training environment

The operationalisation of the training environment was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on 12 items that were adopted and adapted from Burke and Baldwin (1999), Lee and Pershing (2002), Lim (2000), Morgan and Casper, (2000), Rae (2004) and Xiao (1996), as shown in Table 4.6. Furthermore, six items related to the training environment were measured by “yes” or “no” questions, based on five items that were adopted and adapted from Xiao (1996), Lim (2000), Lee and Pershing (2002), Morgan and Casper (2000) and Rea (2004), as shown in Table 4.9.

Operationalisation of the training methods

The operationalisation of the training methods was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on 10 items adapted Simonsen and Reyes (2003), and Morgan and Casper (2000), as shown in Table 4.6. Furthermore, five items related to the training methods were measured by “yes” or “no” questions, based on five items that were adopted and adapted from Simonsen and Reyes, (2003), and Morgan and Casper (2000), as shown in Table 4.9.

Operationalisation of trainer behaviour and performance

The operationalisation of trainer behaviour and performance was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on nine items that were adopted and adapted from Burke and Baldwin, (1999), Morgan and Casper, (2000), Simonsen, and Reyes, (2003), Knowles (1980), Olson (1994), Towler and Dipboye (2001), Rae (2004), Komaki, (1980) Wlodkowski et al., (2008), Clemenz (2001), Rae (2004), Iqbal et al., (2011), Grabowski (1976), Jacobs (1987) and Lim (2000), as shown in Table 4.9.

Operationalisation of reaction

The operationalisation of reaction was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on four items that were adopted and adapted from Burke and Baldwin (1999), Facteau et al., (1995), Lim (2000), Morgan and Casper (2000), Rae (2004), Simonsen and Reyes, (2003), and Warr et al. (1999), as shown in Table 4.9.

Operationalisation of learning

The operationalisation of learning was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on three items that were adopted and adapted from Lee and Pershing (2002), Lim (2000), Morgan and Casper (2000), Rae (2004) and Velada et al., (2007), as shown in Table 4.9.

Operationalisation of intention to transfer learning

The operationalisation of intention to transfer learning was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on two items that were adopted and adapted from Lee and Pershing (2002), Morgan and Casper (2000) and Tracey et al., (1995), as shown in Table 4.9.

Table 4.10 Survey 3 (2–3 months after training)

Constructs	Item code	Measurement items	Adapted from
Training content (TC)	TC1	1- The relevance of the training content to my every day work was very high.	Burke and Baldwin (1999), Holton et al. (2000), Morgan and Casper (2000)
	TC2	2- The information and skills provided in this training programme were easy to apply.	Iqbal et al., (2011), Rea (2004)
	TC3	3- The information offered in this training will improve my professional competencies.	Facteau et al. (1995), Tracey et al., (1995)
	TC4	4- The knowledge and skills required for my job were well supported by the practical activities and exercises of this training programme.	Burke and Baldwin (1999),Velada et al., (2007)
	TC5	5- The importance of applying training skills in the workplace was identified.	Xiao (1996), Burke and Baldwin (1999)
	TC6	6- The knowledge gained in this training was directly relevant to my work.	Burke and Baldwin (1999)
Training objective (TO)	TO1	1- The relevance of the stated training objectives to my work was very high.	Morgan and Casper (2000)
	TO2	2- The training objectives were expressed clearly.	Morgan and Casper (2000)
	TO1	3- The training programme accomplished its stated objectives.	Holton et al. (2000), Miller (2002), Simonsen and Reyes (2003) Rea (2004)
Behavioural change (B)	B1	1- The training directly related to my everyday work role.	Warr et al., (1999), Holton et al., (2000)
	B2	2- The knowledge and skills offered in this course qualify me to deal with the following health and safety issues: accidents and emergency response.	Tracey et al., (1995), Xiao (1996), Facteau et al., (1995)

	B3	3- The knowledge and skills offered in this course qualify me to deal with the following health and safety issues: chemical and hazardous materials safety.	
	B4	4- The knowledge and skills offered in this course qualify me to deal with the following health and safety issues: equipment and machinery.	
	B5	5- The knowledge and skills offered in this course qualify me to deal with the following health and safety issues: personal protective equipment.	
	B6	6- The knowledge and skills offered in this course qualify me to deal with the following health and safety issues: other health and safety issues (please specify) _______________	
Results (Rs)	Rs1	1- After this training, I am better able to recognise unsafe working practices.	Xiao (1996), Facteau et al., (1995), Holton et al., (2000)
	Rs2	2- After this training, I have more personal awareness of health and safety issues.	
	Rs2	3- After this training, I know when I am doing something unsafe or witness or create unsafe practices.	
	Rs3	4- This training will help me promote proper safety procedures while I am on the job.	Tracey et al., (1995), Xiao (1996), Facteau et al., (1995)

4.10.1. 3 Operationalisation of variables in Survey 3 (2–3 months after training)

This section describes the operationalisation of variables in Survey 3 (2–3 months after training).

Operationalisation of training content

The operationalisation of training content was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on six items that were adopted and adapted from Burke and Baldwin (1999), Holton et al., (2000), Morgan and Casper (2000), Iqbal et al., (2011), Rea (2004), Facteau et al., (1995), Tracey et al., (1995), Velada et al., (2007) and Xiao (1996), as shown in Table 4.10.

Operationalisation of training objectives

The operationalisation of training objectives was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on three items that were adopted and adapted from Morgan and Casper (2000), Holton et al., (2000), Miller (2002), Simonsen and Reyes, (2003), and Rea (2004), as shown in Table in 4.10.

Operationalisation of usefulness of training (behavioural change)

The operationalisation of usefulness of training (behavioural change) was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on 10 items that were adapted from Warr et al., (1999), Holton et al., (2000), Tracey et al., (1995), Xiao (1996) and Facteau et al., (1995), as shown in Table 4.10.

Operationalisation of results

The operationalisation of results was measured using a five-point scale where 1 = strongly disagree and 5 = strongly agree. The survey was based on four items that were adapted from Holton et al., (2000), Tracey et al., (1995), Xiao (1996) and Facteau et al., (1995), as shown in Table 4.10.

4.11 Translation of the research instrument

The research instrument (i.e., the survey) was originally written in English, and the final drafts of the English version were translated into Arabic before being administered. To examine the validity of the surveys translated into Arabic and to reduce problems with translating the research instrument from the original language into the research language, the researcher followed the suggestions of Brislin (1970) and Campbell et al., (1970) who recommend several translation methods: one-way translation, back translation, bilingual techniques, committee translation and pre-test procedures (pilot study). Each of these methods are described below.

1. One-way (direct) translations: A bilingual person translates the instrument from the original language into the research language.
2. Back translation: Experienced and qualified translators translate the research instrument. One translator translates the document into the target language, and then another independent translator, who is blind to the original survey, translates it back into the source language. Then, both versions are compared (Sperber, 2004).
3. The bilingual technique: A bilingual individual answers both the original and translated versions to detect any discrepancies in the responses (Maneesriwongul and Dixon, 2004).
4. Committee translation: Two or more bilingual individuals translate the instrument independently or together from the original version to the target language, then they compare their translated versions (McKuy et al., 1996).
5. Pre-test procedures (pilot study): A pilot study is conducted for the translated instrument to ensure that the target participants understand the questions. This test helps to reveal problems with the clarity of the target language among the target population and possibly determines the psychometric characteristics of the translated instrument (Maneesriwongul and Dixon, 2004).

In this study, the original English version of the survey was translated into Arabic through a multi-stage that was similar to the back-translation procedure described above. Brislin et al., (1973) argue that multiple techniques should be used in all cross-cultural research. In fact, this study is not cross-cultural, but the research instrument was originally written in English. Therefore, the translation procedures involved the following three stages:

Stage 1 involved one-way translation, back translation and bilingual techniques. First, a paid translator converted the English version of the survey into Arabic (one-way translation). Then, the researcher produced a second Arabic translation of the same survey and compared the two translations of native Arabic speakers for inconsistencies and discrepancies. The revised Arabic survey was then given to an Arabic research supervisor to compare the English and Arabic versions of the surveys. Then, the revised Arabic version of the survey was translated back into English by experienced and qualified translators to examine the extent to which it differed from the version produced by the first paid translator (back translation). Finally, the professionally translated version was given to an Arabic editor to correct for grammar (bilingual techniques), after which the final professionally translated version was translated back into English once again.

Stage 2 involved committee translation. English and Arabic versions of the survey were given to three members of the academic staff at higher colleges of technology in Oman who were fluent in both spoken and written English and Arabic, and their feedback was requested to ensure that the meanings of all the items were clear. The researcher discussed the translated survey items with the three academics and made any necessary corrections and modifications. The survey was then taken to an Arabic language specialist for the final post-modification validation. This version of the translated survey was considered ready for distribution in the pilot study.

Stage 3 involved a pilot study that was conducted with the translated surveys. The three translated surveys were distributed to trainees in the Omani oil and gas industry. The pilot study of the translated surveys resolved most of the remaining problems and misunderstandings. A perfect translation does not reduce all threats to conceptual equivalence of constructs, but it should at least reduce spurious findings due to inappropriate translations (Dorfman et al., 1997, p. 248).

4.12 Pilot study

Piloting must be conducted before data collection begins (Saunders et al., 2016). The role of a pilot study is to ensure that the research instrument operates well (Bryman and Bell, 2011). Pilot tests aim to identify limitations in the design of the questions and the instrument so that they can be adjusted to ensure valid responses from the participants. It also ensures some validity for the questions and reliability for the collected data (Saunders et al., 2016). Validity includes the process of measuring the intended constructs, while reliability determines the consistency of the research instrument (Gray, 2017). Each participant was asked about the representativeness and suitability of the surveys (Saunders et al., 2016). In the pilot study, 60 surveys for version 1, 2 and 3 were distributed to employees (trainees) in three national oil and gas companies in Oman, with 20 surveys distributed at each of the three companies. The size of a pilot group can range from 5–100 subjects, depending on the data-collection method (Blumberg et al., 2011). The pilot study for Survey 1 (before training) was from 6 April 2016 to 20 April 2016. Fifty-six out of 60 surveys were returned to check the clarity of the survey, which is a response rate of 93.33%. Nineteen (95%) surveys were collected from Company A, 20 surveys (100%) were collected from Company B and 17 (85%) were collected from Company C. The pilot study for Survey 2 (immediately after completed training) was from 10 May 2016 to 24 May 2016. Fifty-two surveys were returned to check the clarity of the survey, which is a response rate of 86.66%. Eighteen (90%) surveys were collected from Company A, 18 surveys (90%) were collected from Company B and 16 (80%) were collected from Company C. The pilot study for Survey 3 (2–3 months after training) was from 12 June 2016 to 23 June 2016. Fifty surveys were returned to check the clarity of the survey, which is a response rate of 83.33%. Seventeen (85%) surveys were collected from Company A, 18 surveys (90%) were collected from Company B and 15 surveys (75%) were collected from Company C.

The response rates of 93.33% in the pilot study for Survey 1, 83.33% for Survey 2 and 83.33% for Survey 3 were very good, which was encouraging. In addition, the sample size was large enough to allow for more analysis, as discussed below.

SPSS (IBM) version 20.0 was used as the base software to statistically analyse the findings of the pilot study. The following section provides a descriptive analysis of the functional data collected in the pilot study for Survey 1 (56 surveys returned), Survey 2 (56 surveys returned) and Survey 3 (50 surveys returned).

4.12.1 Demographic profiles of respondents of pilot study three surveys

This section presents a descriptive analysis of the three surveys. The results from the pilot study for Survey 1 (Table 4.11) Appendix B indicate that the majority of the participants were male (n = 44, 78.6%) and the remaining respondents were female (n = 12, 21.4%). The results of the pilot study for Survey 2 (Table 4.10) indicate that among the 52 respondents, the majority of participants were male (n = 42, 80.8%) and the remaining respondents were female (n = 10, 19.2%). The results of Survey 3 (Table 4.12) show that among the 50 respondents, the majority of the participants were male (n = 40, 80%) and the remaining respondents were female (n = 10, 20%). Appendix B provides more information about demographic profiles of respondents of the pilot study for Survey 1, 2 and 3 (Table 4.11, 4.12 and 4.13, Appendix B).

4.12.2 Reliability of the instrument

All three surveys used internal consistency tests that adopted Cronbach's alpha (α) method to assess the reliability of the measured items. This method is generally used to measure the consistency of the questions. When using Cronbach's alpha, a value of ≤ 0.90 is generally considered to indicate excellent reliability, a value of 0.70–0.90 indicates high reliability, a value 0.50–0.70 indicates moderate reliability and a value ≤ 0.50 indicates low reliability (Hinton et al., 2004). Furthermore, Cronbach's alpha coefficients of 0.7 and more indicate sufficient reliability, as suggested by Nunnaly (1978). Hair et al., (2006) recommend Cronbach's alpha reliability coefficients equal to 0.7 or greater show adequate internal consistency and a 0.60 level can be used in exploratory research.

Reliability of Survey 1 pilot study (before training)

The pilot study for Survey 1 (before training) showed adequate reliability via the Cronbach's alpha values. The measurements of all the constructed items ranged from 0.680–0.854, which indicated moderate to high reliability. Only one item (ETO6) from the expectations for training outcomes (ETO) construct, "Based on the announcement of what I will get from this training I expect to be able recognise unsafe working practices" was dropped in the final survey, which increased the alpha value for the expectation for training outcomes construct to 0.706. Table 4.14 (Appendix B) presents the Cronbach's alpha coefficients for all the constructs obtained from Survey 1.

Reliability of Survey 2 pilot study (immediately after completed training)

Survey 2 (immediately after completed training) showed a high reliability via the Cronbach's alpha values, which ranged from 0.882–0.943 and are considered to indicate high reliability. Table 4.15 (Appendix B) presents the Cronbach's alpha coefficients for all the constructs obtained from Survey 2.

Reliability of Survey 3 pilot study (2–3 months after training)

Survey 3 (2–3 months after training) indicated adequate reliability via the Cronbach's alpha values. The measurements of all the constructed items ranged from 0.770–0.855 which represented moderate to high reliability. One item (TC6) from the training content (TC) construct, "The knowledge gained in this training was directly relevant to my work" was dropped in the final survey, which increased the value of alpha coefficient of the training content construct to 0.770. Table 4.16 (Appendix B) shows the Cronbach's alpha coefficients for all the constructs obtained from Survey 3.

4.12.3 Validity of the pilot study

A pilot test is essential to determine the content validity of the scores delivered by an instrument and to develop questions, the format and scales (Creswell, 2014). Yaghmale (2003) argues that content validity assesses the comprehensiveness and representativeness of the content of a scale. Content validity is defined as "the extent to which the content validity provides adequate coverage of the investigative questions guiding the study" (Cooper and Schindler 2014, p. 257). There are generally two ways to measure content validity: (1) literature review and (2) asking the opinion of expert judges in the field (Yaghmale, 2003; Drost, 2011).

The content validity of the three surveys in the pilot studies was established because (1) all the items were taken from previously published literature and (2) the three surveys were validated by a group of academics at Brunel University who judged the surveys, especially in terms of the items presented in each concept. Some minor revisions were made to the instrument according to their recommendations. In order to detect weaknesses in the design and provide proxy data, the three surveys were delivered in a pilot study to employees who had been selected for health and safety training in the Omani oil and gas industry. Each respondent was asked about the clarity of the instructions, their opinions and if the layout of the surveys were clear and attractive (Saunders et al., 2016). No comments about the three surveys were received from the respondents.

4.12.4 Comments on the three surveys

After conducting a pilot study, no further suggestions were received from the respondents that would have helped to strengthen or make the three surveys clearer. The respondents agreed that the language was simple and the format was sufficient. The three surveys were revised by the doctoral supervisors, and more than 12 versions were produced. For example, the panel felt that there should be a brief synopsis of the survey on the first page of the three surveys, as well as short guidelines for how to answer the questions and reassurance about the confidentiality of the information. In Survey 1(before training), they suggested changing a question in Part 2 from a 'yes' or 'no' answer to multiple-choice. All of these changes were made. Therefore, the questions in all three surveys contained proper wording, response formats and layouts in order to encourage responses and make them easier for participants to provide accurate answers, which also facilitated the ease of analysis. Appendix B presents the three surveys after the pilot test was completed and amendments were made to create the final versions.

4.13 Data analysis

This research aims to investigate the moderating influence of training characteristics on the relationships between training outcomes (reaction, learning, intention to transfer learning, behaviour and results) and to examine the effect of training characteristics on training effectiveness. Data analysis involves two steps: preliminary analysis and factors analysis. Consequently, this study used two statistical software tools to accomplish the research objectives: SPSS was used for the analysis of preliminary data, and AMOS using SEM was used to test the proposed hypotheses. The following subsection provides explanations and justifications for using these two methods and their analysis tests in this study.

4.13.1 SPSS and AMOS

SPSS

SPSS is a popular software tool used to analyse the quantitative data obtained from surveys (e.g., Zikmund et al., 2003). IBM (SPSS) was used in different areas of this study. First, the software package was used to code the data, screen missing data and clean the data. In addition, several operations and methods were used to augment Statistical Package for the Social Sciences, such as data coding, treating missing data (i.e., using ANOVA), identifying outliers (i.e., the Mahalanobis distance, or D2 test) and discerning the data normality (i.e., using kurtosis and skewness statistics; Saunders et al., 2012). Furthermore, SPSS was used to describe other aspects of the statistical data, such as frequencies, percentages, mean values and standard deviations. Each variable was analysed separately when entering and coding the data in SPSS (Ghauri and Gronhaug, 2002). To acquire the initial data, SPSS was performed in order to describe the participants' demographic profiles (Sekaran, 2003). Furthermore, SPSS was used to carry out an exploratory factor analysis (EFA), which was used to summarise the data from several proposed variables into smaller quantities of factors, known as dimension reduction (Hair et al., 2006). This step was essential before conducting SEM. An explanation of SEM will follow, and Chapter 5 will provide more detail on the exploratory factor analysis.

AMOS

AMOS is powerful, and the most friendly and easy to use SEM software (Cunningham and Wang, 2005; In'nami and Koizumi, 2013; Arbuckle, 2014). It has features that allow specifying, estimating, assessing and presenting a model in an intuitive path diagram to illustrate hypothesised relationships among variables of interest (Byren, 2016, Awang, 2015). Its advantage compared with other software in its class is its graphics representation of the model (Awang, 2015). In the current study, AMOS v.21 statistical software was used to perform SEM to present the measurements and the structure using the graphical interface in order to test the hypotheses of the proposed theoretical models.

4.13.2 Preliminary analysis

It is important to screen data prior to data analysis by identifying the missing data or outliers and testing the assumptions of multivariate analysis. In this study, SPSS was used identify the missing data, outliers, normality and multicollinearity. An explanation of the missing data and outliers will follow.

4.13.2. 1 Missing data

Missing data are referred "as the data value that is not stored for a variable in the observation of interest" (Kang, 2013, p. 402). Missing data for specific variables indicate a problem in the measurements, which requires a solution (Bryman and Cramer, 2005). Hair et al., (2006) and Gibbs (2009) argue that missing data occur because of response problems, a fault in the entry of data or a large sample. Some treatments can solve a missing data problem, but choosing the proper technique relies on several factors. In this regard, selecting a technique to minimise missing data is influenced by the causes of the missing data, the types of users, the number of missing values and the sample size (Cohen et al., 2003). If non-ignorable data is missing, or if the missing data is not random, any suggested remedy to treat the problem is likely to yield a biased result. However, if the data are missing at random, any technique used to treat the missing data is likely to generate acceptable results (Hair et al., 2006).

Researchers disagree on what can be considered an appropriate amount of missing data. The amount of missing data is generally considered small if it is 3% or less, but if it is between 10–30%, it is generally considered large (Cohen et al., 2003). Conversely, Kline (1998) points out that missing data should probably represent less than 10% of the entire data (Byrne, 2001). Olinsky et al. (2003) and Kline (2011) suggest that if the missing data is less than 5% of the total data, and the reason for the incomplete data is ignorable, then following a simple analysis would yield acceptable results.

This study adopted the framework of missing data proposed by Byrne (2001), which consists of three stages: 1) exploring the amount of missing data, (2) investigating the pattern of incomplete data (3) learning appropriate approaches to handling missing data. Chapter 5 provides a further explanation of these steps.

4.13.2.2 Outliers

Outliers are defined as "scores that are different from the rest" (Kline, 2011, p. 45). An outlier is divided into two types: univariate and multivariate. A univariate outlier occurs when there is an extreme value on one variable, while a multivariate outlier occurs when there is a strange combination of values on two or more variables (Tabachnick and Fidell, 2013; Kline, 2011). Although there is a lack of agreement on extreme scores, a value of more than three standard deviations exceeding the mean is considered an outlier (Kline, 2011). Examining the frequency distributions of Z-scores can easily reveal univariate outliers (Kline, 2011). Z-scores are defined as the number of standard deviations (SD) a value is above or below the mean (Schauer, 2014). Univariate outliers were checked in this research by transforming the actual scores in the data set to standard scores. The cases with standardised values of more than ± 3.29 were considered potential outliers (Tabachnick and Fidell, 2014). For this study, the cut point was ± 3.29 for the standardised scores used in SPSS for identifying univariate outliers. The results of the current study for univariate outliers in Survey 1 indicated that only four cases had extreme values that exceeded the threshold ± 3.29 for the standardised scores (4, 6, 97 and 4) while the results for univariate outliers in Surveys 2 and 3 showed that no cases had extreme values that exceeded the threshold.

The Mahalanobis distance (D2) measure can reveal multivariate outliers by assessing the distance between a set of variables and the mean of all the variables in a given observation (Hair et al., 2014; Kline, 2011). Higher Mahalanobis distance scores represent extreme values for one or more variables (Hair et al., 2014). A conservative statistical significance test measurement, such as $p < 0.001$, is suggested with a Mahalanobis distance test (Hair et al., 2014; Kline, 2011). For the current study, outliers were not detected by multivariate detection methods as univariate outliers are easier to spot than multivariate outliers (Raykov and Marcoulides, 2008; Tabachnick and Fidell, 2014).

4.13.2. 3 Testing the Assumptions of Multivariate Analysis

Normality and multicollinearity are important assumptions required for the multivariate analysis techniques. In this study, SPSS was used to identify normality and multicollinearity. An explanation of the normality and multicollinearity will follow.

Normality

Normality is defined as "the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution, which is the benchmark for statistical methods" (Hair et al., 2014, p. 69). A violation of the normality assumption occurs when the shape of the offending distribution and the sample size are affected (Hair et al., 2014). The violation of a normality assumption might cause bias or have no relevance to the actual result. Furthermore, a violation of a normality assumption might affect the fit indices and standard errors of parameter estimates, and the chi-square value (Hair et al., 2014). A visual check of a histogram as a normal probability plot is used to diagnose normality by comparing the distribution of the actual data values with a distribution approximating the normal distribution. A distribution is considered normal when the actual data distribution follows the diagonal lines (Hair et al., 2014). Furthermore, two measures can reveal the shape of the distribution: kurtosis and skewness. Kurtosis shows the peakedness or flatness of the actual distribution compared with the normal distribution. Skewness represents the balance of the actual distribution with normal distribution (Hair et al., 2014). With both kurtosis and skewness, the normal distribution scores are zero. However, if the skewness scores fall outside the -1 to +1 range, it shows a substantially skewed distribution (Hair et al., 2014). Conversely, Kline (2005) and West et al. (1995) recommend that a skewness value of more than 3.0 is considered extremely skewed, and kurtosis scores of approximately 8.0 to more than 20.0 are considered extreme kurtosis. In this study, the researcher set the maximum acceptable limits of observation values for the skewness value and for the kurtosis value between -3 and +3 (Kline, 2005). In the current study, the results of this test were found to be significant for all the variables in all three survey samples.

Multicollinearity

Multicollinearity is one assumption of multivariate techniques (Hair et al., 2014). The associations between the variables in the proposed theoretical model are assessed using SEM, which is a multivariate technique. Multicollinearity refers to "a situation where two or more variables are very closely linearly related" (Field, 2013, p. 879). Multicollinearity appears with a high correlation between variables that are more than 0.9 (Tabachnick and Fidell, 2014) or 0.85 (Kline, 2005). To assess multicollinearity, two components (tolerance and variance inflation factor [VIF]) are used to test the pairwise and multiple variable correlations (Hair et al., 2014). Tolerance is the amount of variability in the independent factors that is not explained by the other independent factors (Hair et al., 2010). It assesses multicollinearity (1-SMC) with an acceptable value that is equal to 0.1, while the other predictors explain 90% of the measured variable (Hair et al., 2010; Tabachnick and Fidell, 2014). The variance inflation factor VIF indicates whether a predictor has a strong linear relationship with the other predictors (Field, 2013) and is calculated as the inverse of tolerance (1/tolerance). The acceptance value for multicollinearity is a tolerance should be less than 0.10 or a variance inflation factor greater than 10 (Kline, 2005; Field, 2013; Pallant, 2016) or if one or more large variance inflation factors show multicollinearity (Montgomery et al., 2012). If any of the variance inflation factors are more than 5 or 10, it is an indication that the associated regression coefficients are poorly estimated because of multicollinearity (Montgomery et al., (2012). In the current study, all three surveys had a variance inflation factor (VIF) of less than 10 (e.g. Survey 1=2.232, Survey 2=1.056 and Survey 3=1.027). Subsequently, factor analyses and the SEM for inferential statistical analyses are employed.

4.13.3 Factor analysis

Factor analysis methods are used to analyse the correlation between many variables by describing the variables' underlying dimensions (factors) (Hair et al., 2010). Factor analysis involves combining a large set of variables with a small number of variables or components (factors) (Hair et al., 2010). Factor analysis aims to a) establish the structure of a set of variables, (b) construct a survey to measure any underlying variables and (c) reduce a data set to a more manageable level (Field, 2009, p. 628). This study describes the latent dimensions of the structure before describing the factors. Latent variables are "unobserved theoretical constructs" (McCoach et al., 2007, p. 461). Next, the basic process of factor analysis, which involves summarisation and data reduction (Hair et al., 1995), is described. To accomplish this objective, the researcher can choose the exploratory factor analysis or CFA technique or both. The basis of the exploratory factor analysis technique is to "take what the data give you" (Hair et al., 2014, p. 94), while the CFA technique is based on "the squared multiple correlation for a measured variable" (Hair et al., 2014, p. 542).

This study used CFA to reduce the data, as well as assess and confirm the correlation between the actual data variables under the proposed construct (Zikmund, 2003; Hair et al., 2010).

4.13.3.1 Exploratory factor analysis (EFA)

Parasuraman (1991, p. 757) defines exploratory factor analysis as "a multivariate statistical technique that analyses data on a relatively large set of variables and produces a smaller set of factors, which are linear combinations of the original variables, so that the set of factors captures as much information as possible from the data set". The exploratory factor analysis is widely used in business research because it is a manageable way to group and label items by placing highly related items together in one group and examining the correlations between the variables without prior hypotheses (Hair et al., 2010). There are two stages involved in performing an exploratory factor analysis: extraction and rotation. The purpose of the extraction step is to identify the factors that underlie a number of variables (Acton et al., 2009). The principal component analysis (PCA) is the most frequently used method of extraction due to its reliable assessment of variables without errors (Luck and Rubin, 1987). The aim of the rotation stage is to show the pattern of loadings in a manner that is easy to interpret. Rotation involves two approaches: orthogonal and oblique (Tabachnick and Fidell, 2013). An orthogonal rotation generates unrelated factors, and an oblique rotation yields correlated factors (Bryman and Cramer, 2005; Acton et al., 2009; Tabachnick and Fidell, 2013).

A principal component analysis and an orthogonal technique with varimax rotation are used to perform a factor analysis using SPSS. An orthogonal model is suitable for any research for several reasons. It offers less complexity when interpreting data (factors are unrelated); it provides results that are easily described, interpreted and presented; and it minimises the number of factors that are needed because they are unrelated (Bryman and Cramer, 2005; Tabachnick and Fidell, 2013). Nevertheless, this study did not perform an exploratory factor analysis because CFA played the same role in minimising the number of factors that were needed because they were unrelated. A SEM is a CFA model (Nachtigall et al., 2003). Therefore, a CFA using SEM was employed to check the identified dimensions, as explained in the next section. Table 4.17 (Appendix B) provides a summary of the statistical software packages that were used to analyse the data in this study. In the current study, SPSS were used for screening data, descriptive analysis, assessing reliability and factor analysis, while AMOS using SEM technique were used to analyse the data and test the hypotheses.

4.13. 4 Structural equation modelling (SEM)

SEM is used widely and is the most significant technique for analysing data in academic research (Byrne, 2001; Kline, 2011; Hair et al., 2014). SEM is a collection of related statistical techniques (Kline, 2011) that test the relationships between constructs (Hair et al., 2014). It is a confirmatory methodology used in the analysis of a structural theory tolerated in some phenomenon (Byrne, 2006). The researcher can simultaneously examine the correlation between multiple dependent and independent constructs (Hair et al., 2014; Tabachnick and Fidell, 2013). SEM was appropriate for this study because it included multiple independent-dependent relationships that were proposed in the developed framework, as explained in Chapter 3. Furthermore, this model is able to specify latent variable models that provide separate estimates of relationships between latent constructs and their manifest indicators (the measurement model) and estimates of the relationships between constructs (the structural model) (Tomarken and Waller, 2005). There were several reasons for selecting SEM for the data analysis. SEM certifies the correlation between unobservable variables and indicators, and helps to examine the relationships between latent variables in one model (Bryne, 2001; Hoyle, 2012; Tabachnick and Fidell, 2013; Hair et al., 2010). Furthermore, it is a precise statistical methodology that can be used to evaluate complex models (Bryne, 2001; Edwards et al., 2012; Hair et al., 2010; Tabachnick and Fidell, 2013).

SEM has several strengths that have been responsible for its increasing popularity in data analysis (e.g., McCoach et al., 2007; Nachtigall1 et al., 2003; Tomarken and Waller, 2005; Wolf et al., 2013). Its flexibility permits the examination of complex associations, use of different types of data (e.g., categorical, dimensional, censored and count variables), as well as comparisons across alternative models (Wolf et al., 2013). Moreover, its easy to use, which allows researchers to model the direct, indirect and total effects of a system of variables, thereby facilitating the development and testing of mediational models (McCoach et al., 2007), as well as the testing of moderational models. Its ability to analyse both observed and latent variables allows researchers to test a wider variety of hypotheses than would be possible with traditional statistical techniques, such as multiple regression or the analysis of variance (ANOVA), which only analyse observed variables (Kline, 2016). In addition, the availability of measures of global fit provide a summary evaluation for complex models that involve a large number of linear equations and it supports the model comparison approach for data analysis (Tomarken and Waller, 2005). Furthermore, its explicit account of measurement error allows researchers to separate 'true variance' (variance that is common among indicators of a single construct) from 'error variance' or 'disturbance' (variance that is due to other factors, including error in measurement) (McCoach et al., 2007). It can indicate a reciprocal causal relationship between latent variables (Jeon, 2015). Finally, it is suitable for analysing data with large samples (Kline, 2016; McCoach, 2007), and the minimum sample size should be at least 200 (Kline, 2016; Weston and Gore, 2006). Therefore, this study used the SEM technique to analyse the data and test the hypotheses.

SEM involves the use of measurement and structural models (Bryne, 2001; Hair et al., 2010). In this regard, a structural equation model consists of two multivariate techniques known as CFA or factor analysis and a structural model (or a path diagram) (Hair et al., 2014). CFA aims to test and confirm the relationship between the measurement items of the variables and their respective constructs, and a structural model verifies the relationships between dependent and independent variables based on theory and prior experience (Hair et al., 2014). This study used a two-stage approach for the SEM analysis. Initially, the measurement model was evaluated by measuring the unidimensionality, reliability and validity of the latent constructs using confirmatory factor analysis. The next step was to implement the structural model by investigating the relationships between the latent constructs in the developed model (Kline, 2005; Hair et al., 2014). The structural model represented the relationships between the latent constructs, as described in Chapter 3. The structural model was used to identify what constructs directly or indirectly influenced the values of the other constructs in the model (Byrne, 2001). Chapter 5 presents the results of structural model analysis.

A large segment of management research has used SEM to analyse data since the early 1980s (Williams et al., 2009). To analyse the data in this study, a SEM software package known as AMOS, version 21, was used to investigate the statistical relationships between the test items of each factor and between the independent variables: pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and training objectives. The dependent variables were expectations for training outcomes, expectations of the training environment, expectations of trainer performance and behaviour, reaction, learning, intention to transfer learning behaviour and results, which were used to validate the hypotheses and test the proposed conceptual framework.

4.13.4. 1 Measurement model

CFA is a measurement model that validates and confirms the relationships between factors and their measured variables within the framework of SEM (Byrne, 2001). In this regard, CFA is a highly critical part of SEM (Kline, 2011). This method is appropriate when the researcher has some background knowledge of the underlying unobserved variables (Byrne, 2001). In contrast to an exploratory factor analysis, a CFA statistically tests a priori hypotheses related to the link between measured variables and the construct (Byrne, 2001). This involves two approaches: goodness of fit (GOF) criteria indices and (2) validity and reliability (Hair et al., 2014). In this study, the measurement model was used to evaluate the validity, reliability and unidimensionality of the measures, as explained below.

Goodness of fit (GOF) indices

Goodness of fit is referred as a "measure of the goodness of fit of a model to the observed data, including R2, the squared multiple correlation in multiple regression, analogues to R2 in other regression models, and indices of fit in SEM" (Cohen et al., 2003, p. 673). Three types of indices fit in SEM: absolute fit indices, incremental fit indices and parsimonious fit indices (Hair et al., 2014). Three to four fit measures should be used to prove the fit of a model (Hair et al., 2014). Fit indices should be involved when assessing the proposed model to ensure the fit is acceptable. The indices include the chi-square ($\chi 2$) value and degrees of freedom index, signal incremental index (e.g., comparative fit index [CFI] or Tucker-Lewis index [TLI], signal Goodness of fit [GOF] indices, goodness of fit index [GFI], comparative fit index [CFI], Tucker-Lewis index [TLI], etc.) and single absolute indices (e.g. goodness of fit index [GFI], root mean square error of approximation [RMSEA], or standardised root mean residual [SRMR]) (Hair et al., 2014). The absolute fit indices assess whether a theory suggested by a researcher fits the sample data. These measures include the chi-square ($\chi 2$) statistic, goodness of fit index (GFI), root mean square error of approximation (RMSEA), root mean square residual (RMR) and standardised root mean residual (SRMR), as well as the ratio of chi-square ($\chi 2$) to the degrees of freedom for a model (normed chi-square) and the adjusted goodness of fit index (Hair, 2014; Hooper et al., 2008). The incremental fit indices evaluate how well the estimated model fits relative to an alternative baseline model, which assumes all observed variables are unrelated. These indices include the Tucker-Lewis index and comparative fit index (Hair et al., 2014). Parsimonious fit indices evaluate completed models, including the adjusted goodness of fit index (AGFI), parsimony goodness of fit index (PGFI) and parsimony normed fit index (PNFI) (Hair, 2014; Hooper et al., 2008). To check and represent the goodness of fit observed data, this study used the chi-square (X^2) test, normed chi-square (X^2 /df), goodness of fit index, root mean square error of approximation (comparative fit index, Normed fit index [NFI], adjusted goodness of fit index,parsimony normed fit index and parsimony goodness of fit index). Table 4.18 presents the details of the index and their acceptance levels.

Table 4.18 The details of the index and their acceptance levels

Type of fit index	Index	Recommended Criteria	References
Absolute fit	Chi-square to (X^2)	P > 0.05	Hair et al., (2014)
	Root mean square error of	The RMSEA is between	Hair et al., (2014)

	approximation (RMSEA)	0.03 and 0.08, < 0.05 Good fit < 0.08 acceptable Fit	
	Normed chi-squared (X^2/df), ratio of chi-square ($\chi2$) to the degrees of freedom for a Model	< 5.00	Kline (2005), Shadfar and Malekmohammadi, 2013, Schumacker and Lomax, (2004)
	Goodness of fit index (GFI)	Range of GFI value is 0–1. > 0.90 is good	Joreskog and Sorbom (1988), Hair et al., (2014)
Incremental fit	Comparative fit index (CFI)	> 0.90 is good	Hair et al., (2014)
	Normed fit index (NFI)	> 0.90 is good	Bryne (2001)
Parsimonious fit	Parsimonious normed chi-square (PNFI)	> 0.50	Bryne (2001), Mulaik et al., (1989)
	Parsimony goodness of fit index (PGFI)	> 0.40	Bryne (2001), Mulaik et al., (1989)
	Adjusted goodness-of-fit index (AGFI)	> 0.90 is good	Hair et al., (2006)

Model estimates

The measurement model in SEM could also be evaluated with a standardised regression weight or critical ratio estimates criteria. Several researchers recommend the estimation methods and their acceptable cut-off values employed in this research. For example, the value of the load factor should be more than 0.7 (Holmes-Smith et al., 2006), and a value more than 0.5 is good (Churchill, 1979). Furthermore, the values of the critical ratio are acceptable if they are more than 1.96 (Byrne, 2001; Hair et al., 2014).

Table 4. 19 Measurement model estimate

Estimates	Suggested values	References
Factor loading	0.5 is acceptable > 0.7 is good	Churchill (1979), Holmes-Smith et al. (2006), Byrne (2001), Hair et al., (2014)
Critical ratio (t-value)	> 1.96	Byrne (2001), Hair et al., (2014)
Standard residuals	± 2.5	Byrne (2001), Hair et al. (2006) (2014)

As stated above, a measurement model is used to validate and confirm the correlation among indicators and underlying constructs. Thus, a CFA was conducted to determine and confirm the pattern by which the observed variables were loaded onto specific latent variables (Kline, 2005; Hair et al., 1998).

The maximum likelihood (ML) is referred to an estimate “that maximizes the likelihood (the continuous generalisation) that the data (the observed covariances) were drawn from this population” (Kline, 2011, p. 145). The maximum likelihood method is widely used in SEM analyses to evaluate the measurement model (Bollen, 1989; Kline, 2011; Hair et al., 2014; Tabachnick and Fidell, 2007) due to its abilities to estimate the values of missing data and to improve parameter estimates to reduce a specified fit function (Hair et al., 2014). Consequently, the maximum likelihood estimation method was selected based on suggestions by several researchers (Anderson and Gerbing, 1988; Byrne, 2001; Hair et al., 2014; Kline, 2011). The features of this estimation method include larger sample size, multivariate normality of the sample distribution, valid hypotheses and a continuous scale of indicator variables with a Likert scale with at least four categories (Bollen, 1989; Byrne, 2001; Kline, 2011; Tabachnick and Fidell, 2007). In addition, the maximum likelihood method is considered an unbiased technique under moderate violations of multivariate normality with moderately sized samples and at a minimum of five items for each unobservable variable (Anderson and Gerbing, 1988; Bollen, 1989; Kline, 2011; Hair et al., 2014).

4.14 Reliability and validity

When collecting data, reliability and validity must be established for the survey, question design, survey construction and the pilot test (Saunders et al., 2012). Further details about the reliability and validity of the survey are provided below.

4.14.1 Reliability

The reliability of a measure shows the consistency and stability of the measurement instrument (Sekaran, 2003). It is significant because it helps the researcher identify the consistency of the measurement instrument and evaluate the quality of the measure (Sekaran, 2003). There are two types of reliability: internal and external. Internal reliability is particularly important when there are various measurement items for a single construct (Bryman and Cramer, 2005). In the current study, such measurements involved multiple items. For example, five items were used to measure the results, six items were used to measure reaction and six were used for learning, as described earlier. The reliability of the measurement items was assessed by testing the consistency of the participants' responses with the overall question items in the measure, as suggested by Nunally (1978). Cronbach's alpha reliability coefficients were used to measure the internal consistency of each measure with a minimum cut-off value of 0.7, which was used to identify the degree of reliability for each measure and to discover the overall reliability of each of the unobservable variables. Chapter 5 (Section 5.7) presents the results of the reliability test.

4.12. 2 Validity

Validity is concerned with the accuracy of a measure or the degree to which a source accurately represents a concept (Zikmund et al., 2009). According to Hair et al. (2014, p. 124), validity is "the extent to which a scale or set of measures accurately represents the concept of interest". The better the fit between an empirical indicator and a theoretical construct, the higher the measurement validity (Neumann, 2003). There are several types of validity tests, which are described below.

4.14.2.1 Content validity

Content validity is considered good if the instrument contains a representative sample of the subject matter of interest (Cooper and Schindler, 2014). This study assessed content validity by (1) determining the constructs to be measured, which were defined and used in previously published literature (Yaghmale, 2003); (2) asking a panel of experts with experience in the field of training and training evaluation to provide their judgement on the survey, especially regarding items in each concept. As a result some minor revisions were made to the instrument according to their recommendations; and (3) undertaking a pilot study with a group of individuals who resembled the target population.

4.14.2.2 Construct validity

A construct's validity can be tested by convergent and discriminant validity (Hair et al., 2010). In this research, convergent and discriminant validity were adopted to ensure the accuracy of the measurements of the unobserved measures representing the concept of interest. Below is an explanation of these forms of validity.

Convergent validity is the degree to which observable variables of a specific construct share a high proportion of variance (Hair et al., 2014). Several measures are used to estimate the qualified amount of convergent validity among item measures, such as factor loadings of the construct, average variance extracted (AVE) and construct reliability (CR) estimations (Hair et al., 2014). Hair et al. (2006) recommend ideal standardised loading estimates of 0.7 or higher, average variance extracted estimation of 0.5 or higher and reliability estimates of 0.7 or higher to show adequate convergent validity. The researcher chose to use the recommendations of Hair et al., and the convergent validity results are presented in Chapter 5 (Section 5.11.2).

Discriminant validity is the degree to which an unobservable variable is truly different from other constructs (Hair et al., 2014). Hair et al., (2006) suggest procedures for evaluating discriminant validity that compare the average variance-extracted values of any two latent constructs with the corresponding square of the inter-construct correlations (SIC) between the two latent constructs. The authors also note that an average variance extracted estimate that is consistently greater than the SIC estimates shows evidence of discriminant validity (Hair et al., 2014). This procedure was selected for the current study to assess the discriminant validity of each of the constructs. Chapter 5 (Section 5.10.2) presents the results of the discriminant validity test.

4.15 Structural model evaluation and hypothesis testing

After the measurement scales are developed and validated, the hypotheses were tested using SEM. The process for SEM involves two types of models: CFA and the path diagram (Hair et al., 2014). CFA was conducted on the measurement model to assess the unidimensionality, reliability and validity of the measures in this research. Specifying the structural model is a significant step in SEM because it converts the measurement model into a structural model and assigns relationships from one construct to another based on the proposed theoretical model (Hair et al., 2014) in order to test the hypothesis. Therefore, the structural model (hypothesised model) shows the relationship between the latent constructs, as presented in Chapter 3. According to Byrne (2001), the structural model aims to specify what constructs directly or indirectly influence the values of other constructs in the model. Chapter 5 presents the results of the structural model for the three surveys.

4.16 Ethical considerations

Ethics involves behaviour that is right or wrong. Likewise, research ethics involves the way in which research is performed and how the results are approached (Collis and Hussey, 2003, 2014). Ethical research is important because it avoids doing harm to participants and voluntary respondents and provides confidentiality and anonymity for the participants (Collis and Hussey, 2014). This research followed ethical guidelines during all stages. Permission was obtained from the relevant organisations before data were collected. The details of the companies were obtained from their websites and the Omani ministry of oil and gas. Each of the three surveys, including a letter by the researcher, was provided by email or personal visit to trainees attending health and safety training in oil and gas industry to investigate the of impact of training characteristics on training effectiveness. The participants were informed about the aims, reasons and significance of conducting this research. Voluntary participation was offered to the participants who could withdraw at any stage of the survey before completion. Those who were willing to participate were asked to return the survey. The confidentiality and anonymity of the participants were protected. Furthermore, the participants were not asked to write their names on the three surveys and their data were coded to ensure anonymity and confidentiality during the research process.

The Brunel University Ethics Committee guided this research according to the Ethics Policy Guidelines, which requires the researcher and the researcher's supervisor to sign the Brunel Business School Research Ethics form and submit it to the Brunel University Ethics Committee. The ethics committee of Brunel University then approved this research. A consent form and participation information sheet were attached to the three surveys providing the research title, information about the author and school name, the purpose of the research and what was involved in participation. This information was presented in a way that was easy to understand by the respondents before filling in the three surveys (Appendix B).

4.17 Research context

This section briefly discusses the nature of training and development provided in the workplace, where this study will be conducted. This section begins by providing an overview of training and development and training evaluation in a number of Arab countries. The study then proceeds to discuss the existing training practices and training evaluation methods in Gulf countries where Oman is geographically located.

4.17.1. Training in Arab and Gulf countries

There has been a recent interest in providing training in Arab counties, particularly to improve the performance of the workforce in order to accomplish the required level of effectiveness and to remain successful. The Arab world consists of 23 countries in the Middle East and North Africa, including Algeria, Bahrain, Comoros, Djibouti, Egypt, Eritrea, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen (Benamer and Donald, 2009). The inadequacy of capable, educated and trained managers and workers in Arab countries has led governments and private companies to pay more attention to training and development (Atiyyah, 1993; Al-Madhoun and Analoui, 2003). Atiyyah (1993) and Al-Faleh (1987) also argue that the lack of development at managerial level has affected development in these counties.

Moreover, increasing pressure from globalisation and modernisation, effectiveness of organisations and the competitive need for well-educated and qualified workers are forcing these countries to pay more attention to training and to continue their investments in training and development. Public organisations in Arab countries tended to change after the application of training and development programmes and spending more time and effort on redesigning plans to cope with new adjustments and challenges (Al-Tayeb, 1986). Thus, Al-Elobeidy (2016) claims that technical and vocational training programmes must be a priority in Arab courtiers. Technical and vocational courses in higher education play an important role in developing human resources (Rena, 2006).

Despite the signs of progress, training in most Arab countries is unlikely reach to the desired level of efficiency and effectiveness (Al-El Obeidy, 2016). For instance, evaluating training programmes are not conducted in a professional manner (Abdalla and Al-Homoud, 1995; Altarawneh, 2009; Muna and Bank, 1993).

4.17.2 Training evaluation in Arab and Gulf countries

The literature on training and training evaluation shows that most Arab countries, including Gulf countries, have difficulties with evaluating training. For example, there is a lack of management support for human resource practices in Arab countries (Al-Sayyed, 2014). Muna and Bank (1993) support this finding with their study of 177 managers in six Gulf countries, which shows that formal and systematic evaluation is infrequent.

Moreover, Abdalla and Al-Homoud (1995) state that there is no systematic evaluation to measure the effectiveness of training programmes. Furthermore, evaluation is incomplete and not followed up on (Al-Fathely, 1995; Al-Ali, 1999, Altarawneh, 2009). Al-Athari and Zairi (2002) found that Kuwaiti organisations measure the effectiveness of training programmes by determining the satisfaction of participants instead of identifying changes in behaviour, transfer of learning and assessment of acquired learning from the training programme. There was even a lack of emphasis on the need to assess the organisational results of training.

Despite the importance of training, the methods used to conduct evaluations are inappropriate in Arab organisations. Inadequate assessment tools in Arab countries have been suggested (Abdalla and Al-Homoud, 1995; Abdalla et al.,1998;Al-Athari and Zairi, 2002; Al-Fathaly and Chakerian,1983;Al-Tayeb,1986; Atiyyah,1991, Bahar et al.,1996; Hung, 2010). Attiya (1993) and Al-Athari and Zairi (2002) find that the most widely measured level of training effectiveness is reaction.

4.17.3 Developing human resources in Oman

Human resource is developed in Oman due to higher levels of education, encouraging the participation of women in the labour market and increasing the number of workers who participate in the economy. Oman shows its commitment to developing human resource through three important plans were set up: a five year plan training programme, Omanisation plan and vision 2020. Appendix (A) provides more information about training and development in Oman.

The five-year plan

The government has plans to empower young Omani citizens through a five-year training programme (Thomaskutty, 2010) to develop human resources in Oman. Al-Lamki (2000) maintains that human resource development has been prioritised throughout the Sultanate of Oman's successive Five-Year Development Plan. The Eighth Five-Year Plan (2011–2015) provides external scholarships plus 130 million riyals (approx. US $330 million) (Rajasekar and Khan, 2013). The Omani government has set aside up to $260 million for human resource development programmes (Rajasekar and Khan, 2013). These grants are intended to help the Omani people become qualified and to play important roles in the development of their country (Rajasekar and Khan, 2013). While the country continues to experience declining oil revenues, the Omani government is committed to improving the skills of the population and investing in youth. Therefore, education authorities are moving forward with reforms that focus on improving its strategic learning objectives to meet the demands of the labour market (Oxford Business School, 2017).

Omanisation

Since university graduates needed to be included in the workforce, the Omani government made an effort to educate young Omanis through Omanisation, as stated by Budhwar et al.,(2002) (Rajasekar and Khan, 2013). Omanisation refers to the human resource planning and training in Oman for local workforces, and providing training and development to the Omani people (Rajasekar and Khan, 2013), as well as formal employment preferences for local people (Khan, 2010). According to this policy, a certain percentage of achievements must be accomplished by organisations over a certain period, but this varies from one sector to another. Omanisation should be approximately 25% of total workers in Oman in 2020 (Scott-Jackson et al., 2014). Firms argue that this strategy limits their competition and reduces their competitive advantage (Khan, 2011).

Omanisation is meant to enhance the training and development of citizens by aiming to increase the number of qualified local people who can work in the public and private sectors. The goal of this strategy is to increase the number of Omani employees in the public sector and encourage local people to work in the private sector because young people generally prefer to work for public organisations (Al-Hamadi et al., 2007). Therefore, some efforts have been made to apply the Omanisation strategy to the public and private sectors by giving opportunities to Omani citizens that would otherwise go to foreign workers without negatively affecting job or organisational performance. Despite achieving good results within the public sector (Valeri, 2005), the private sector faces some challenges. Valeri (2005) and Scott-Jackson et al., (2014) argue that young Omanis are not prepared to live off of minimum wage, which is between 60–90 rials per month, and younger Omanis view jobs in the public sector as more secure, easier and more desirable, while private sector companies perceive expatriates as cheaper, more committed and easier to manage. Therefore, many expatriates occupy strategic roles in private companies (e.g., leadership and critical knowledge areas).

Vision 2020

The Omani government outlined its commitment to development programmes in a document called Vision 2020 (Al-Lamki, 2000; Budhwar et al., 2002; Al-Hamadi et al., 2007; Rajasekar and Khan, 2013), which considers the need for employee development and effective management of talent. Vision 2020 was announced in 1995 and implementation began in 1996 with the aim to achieve a diverse, dynamic and globalised economy supported by the operation of an efficient and competitive private sector (Al-Hamadi et al., 2007). Al-Hamadi et al., (2007) summarise the objectives of the 2020 vision as developing human resources and the capabilities of the Omani people to generate and manage technological changes efficiently. Since the key to economic growth is a literate nation, this vision aims to develop the skills, abilities and knowledge of the local people so they can face the challenges of the 21st century (Al-Hamadi et al., 2007).

Al-Lamki (2000) argues that Vision 2020 is necessary because Oman needs a competent and efficient workforce in order to reduce its dependence on oil resources and foreign workers. The execution of a successful privatisation programme, industrialisation and technological innovation will also help to make Oman more competitive in the global market. Contrary to Al-Lamki's view of Vision 2020, studies by Al-Lamki (1998), Al-Maskiry (1992) and Eickelman (1991) point out obstacles to the implementation of this plan. For instance, coordination is missing between the government and the private sector. At the beginning of the 1970s, private companies were searching for skilled workers, but the supply of skilled workers did not meet the demand of the labour market. The public is also unaware of important job opportunities in the private sector because they assume these jobs will result in lower salaries, longer working hours and fewer holidays. Moreover, employers refuse to recruit unqualified Omani people who are less experienced (Al-Lamki, 2000). To meet this challenge, the Omanisation policy requires private sector companies to meet quotas for employing native Omani workers even though such a requirement distorts the labour market (Oprescu, 2011).

4.17.4 Barriers to developing human resources in Oman

A number of factors hinder the implementation of training and development polices in Oman (Al-Fahdi and Swailes, 2009; Al-Hamadi et al., 2007; Budhwar et al., 2002; Rajasekar and Khan, 2013). For example, Budhwar et al., (2002) show that public organisations face difficulties with applying human resource development programmes when there is a lack of support (e.g., financial support), and some management levels resist organisational change. Moreover, Al-Fahdi and Swailes (2009) show that there is no real understanding of human resource development concepts, as well as a lack of strategic planning, poor career management, lack of job descriptions, ineffective performance appraisals, dominant self-interests, lack of appropriate training and a lack of top management support for human resource development in the public sector of Oman. Furthermore, Al-Hamadi et al., (2007) find that Islam, civil service laws, an expatriate workforce and social elites are critical factors affecting human resource management. They suggest the need for a long-term strategy, adequate funds and close follow-ups to overcome the identified barriers that influence human resource management. Rajasekar and Khan (2013) indicate that training and development in the public sector faces critical obstacles, such as bureaucracy, fund distribution, difficulties with transferring behavioural change to the workplace and the considerable amount of work done by individual organisations and, a lack of seriousness from management regarding training and evaluation processes, as well as relaxed coordination between management for training and development issues.

4.17.5 Training evaluation in Oman

The Omani oil and gas industry provides training programmes to its employees at different levels (Al-Harthy, 2007), and Oman has invested heavily in training and development. On the other hand, Rajasekar and Khan (2013) indicate that in Oman, the most significant and challenging element in the training cycle in the public sector is the evaluation process, which requires more follow-ups. Furthermore, Al-Harthy (2007) investigates the usefulness of training programmes in the oil and gas industry and finds that the assessment of employee performance is unfair, feedback from managers is given slowly and infrequently, feedback is not useful and performance reviews (360-degree feedback) are not used to judge employees' performance. Moreover, Khan et al., (2015) evaluated the career development plan at Oman Natural Gas (ONG) and found that most employees consider the current electronic training evaluation system to be ineffective because it does not provide enough space for them to express their views freely (open-ended questions) and their perceptions are also not well received, nor are they given much importance by their managers. Further details on these studies and training evaluation in Oman are provided in Appendix A.

Few studies have been conducted on training evaluation in the context of Oman and little research has been done specifically on the effect of training characteristics on the effectiveness of training. This study investigates the effects of training characteristics on training effectiveness in the context of the Omani national oil and gas sector.

4.18 Conclusion

The current study developed and adopted a research methodology. The research design was operationalised into a protocol that provided a systematic procedure for collecting data. Many researchers in the domain of human resource research and management research have applied a positivist approach. It is observed that individual's attitudes and behaviours can be assessed using this approach. Therefore, a positivist approach was considered appropriate for this study. The reasons for the selection of the survey as a research approach were presented in a detailed manner. To validate and understand the conceptual framework of this study, it was necessary to show that a quantitative research approach would be more appropriate than a qualitative one. Therefore, measurement scales were identified for each of the constructs in the three surveys based on well-known previously tested scales, as depicted in Tables 4.8–4.10. The data collection tool used in this research was a self-administrated survey, and the data were gathered from employees at different levels who were identified as potential health and safety trainees in the Omani national oil and gas companies.

A pilot study was conducted to test the reliability and validity of the three surveys before the full-scale research began. In addition, this chapter discussed practical considerations, such as sampling, participation, measurement scales and data analysis procedures. After completing the study, the data from the three surveys were cleaned, coded and entered into the IBM (SPSS) version 20.0 software for Windows. Furthermore, analytical techniques, including descriptive statistics and exploratory factor analyses were discussed briefly. Finally, the ethical issues involved in this research were provided. Chapter 5 presents the results of the three surveys and tests the hypotheses and relationships between the independent, dependent and moderate variables. Finally, the chapter described the context of the study, training and development and evaluation in Arab and Gulf countries, including training and development and evaluation in Oman.

Chapter Five: Analysis and Results

5.0 Introduction

The results of the three-questionnaire survey that was designed in Chapter 4 are presented in this chapter, which is divided into thirteen sections. Section 5.2 describes data management. Section 5.3 reports the screening of data prior to data analysis. Section 5.4 provides the demographic details of respondents to the three surveys. Section 5.5 provides the descriptive statistics of the general features before and after the training programme. Section 5.6 presents the descriptive statistics for the items of measured constructs on three surveys. Section 5.7 presents the reliability assessment. Section 5.8 reports the factor analysis. Section 5.9 presents the structural equation modelling. Section 5.10 provides the findings of the exploratory factor analysis for the three surveys. Section 5.11 reports the structural model evaluation and findings from the hypotheses tested in this research. Section 5.12 presents the moderation test for Surveys 2 and 3. Section 5.13 provides a summary of the results of this research.

5.1 Data management

This empirical research was undertaken from June 2016 to October 2016. The three survey questionnaires were distributed to 800 participants via web-based survey, email, or personal visits based on selection via random sampling from three national oil and gas companies in Oman. The participants were all employees who had been selected for health and safety training. During the data collection, Surveys 2 and 3 were sent to the participants who provided their e-mail addresses or contact phone numbers in Survey 1. Also, reminders were sent to the non-respondents for Surveys 1, 2 and 3 after 15 days, and this procedure was followed a maximum of three times before these non-responders were removed from the study. As participation was voluntary, none of the participants were forced to complete the three survey questionnaires. The response rate of three surveys were for survey 1 (before training) (406 participants), 50.75 %, Survey 2 (immediately after completed training), (402 participants), 50.25%, and Survey 3 (2-3 months after completed training) 391 participants, 48.87% which are satisfactory for the research.

The IBM Statistical Package for the Social Sciences (SPSS) v.20 for Windows was used to perform the descriptive statistics and the exploratory factor analysis of this three-survey sample. Before quantitative data entry, each of the columns and rows in SPSS were improved by coding the question items of the three-survey sample. Also, the value section of the columns was set from “1” for Strongly “Disagree” to “5” for “Strongly Agree” on a five-point Likert scale. Then, the quantitative data were managed using the SPSS software package; all the numeric response values were entered.

The statistical software Analysis of Moment Structures (AMOS) v.21 was used to perform the structural equation modelling to present the measurement and the structure using the graphical interface in order to test the hypotheses of the proposed theoretical models.

5.2 Screening data prior to data analysis of the three-survey sample

The Statistical Package for the Social Sciences (SPSS) v.20 was used to analyse the preliminary data by screening the data by identifying the missing data or outliers, and then a set of procedures were applied for handling the missing values or outliers in order to ensure the accuracy of the data analysis. Then, the normality distribution of the data was assessed by investigating the kurtosis and skewness of the data.

5.3 Response rate of data

As mentioned in Chapter Four, this study was conducted using three survey questionnaires. This section presents missing data and the final response rate for the three-survey sample. Before getting the final response rate of the data, it is necessary that the data be cleaned to ensure there are no missing values or outliers. The Following sub-sections discuss the data missing from the research.

5.3.1 Missing data

It is significant to inspect missing data in any research using humans because it is rare for complete data to be obtained from every case (Pallant, 2016). Missing data refers to the unavailable values for one or more variables (Pallant, 2010; Hair et al., 2010). It is a common problem in survey studies (Bryman and Cramer, 2011). Bryman and Cramer (2005) argued that having a large sample or a long questionnaire can lead to questions being missed by respondents, which is a common cause of missing data. Missing data influences the ability of statistical tests to establish a relationship in the data set, and it causes biased parameter estimates (Hair et al., 2013; Tabachnick and Fidell, 2006). The significance of the impact of the missing data depends on the pattern of the missing data, the amount of missing data and the reasons the data is missing (Tabachnick and Fidell, 2014). The patterns of ignorable missing data involve missing at random (MAR) or missing completely at random (MACR) (Hair et al., 2006, 2010; Klein, 2005).

There are several views about what constitutes a large percentage of missing data. If the missing data accounts for less than 5% of the data and follows a random pattern, it is not a serious problem (Tabachnick and Fidell, 2016). However, Hair et al., (2010) suggest that missing data in a random pattern would have little effect on a variable if the amount is under 10%. Olinsky et al., (2003) suggest that if the missing data for cases is less than approximately 5% of the total data, and the pattern is ignorable, the analysis of the data would not encounter problems in terms of the reliability of the results. In data with null responses, however, these sample(s) should be removed (Norusis, 1997). According to Kline (2005), the deletion of cases with missing observations solve the completely missed data in order to analyse available data. The following sub-sections show the missing data in the three-survey sample.

5.3.1.1 Missing data for Survey 1

There were no missing values for Survey 1 among the 406 complete questionnaires that were collected, which indicates they were acceptable for use in the analysis. Hence, the removal of all missing data—17 samples (ignorable missing data) out of the 423 collected samples—would not affect the analysis of the results.

5.3.1.2 Missing data for Survey 2

There were no missing values in Survey 2 among the 402 complete questionnaires that were collected, which indicates that these were acceptable for use in the analysis. Hence, the removal of all missing data—21 samples (ignorable missing data) out of the 422 collected samples—would not affect the analysis of the results.

5.3.1.3 Missing data for Survey 3

There were no missing values in Survey 3 among the 391 complete questionnaires that were collected, which indicates that these were acceptable for use in the analysis. Hence, the removal of all missing data—18 samples (ignorable missing data) out of the 409 collected samples—would not affect the analysis of the results.

5.3.2 Response rate for the three surveys

Based on the missing data section, this subsection presents the final response rate for the three-survey sample.

5.3.2.1 Response rate for Survey 1

In survey 1, 423 questionnaires were returned out of 800 distributed, which is a response rate of 52.9%. However, among the returned questionnaires, 17 responses were discarded: nine of the questionnaires were returned completely blank, five respondents put the same answers on all the Likert-scale items and three questionnaires were partially answered (i.e. some questions in Section 2 and 3 were blank, and some left all of Sections 2 or 3 blank). Therefore, the remaining 406 questionnaires were used for data analysis. Consequently, the final response rate for this survey was 50.75%.

5.3.2.2 Response rate for Survey 2

In Survey 2, 422 questionnaires were returned out of the 800 distributed, which is a response rate of 52.75%. However, among the returned questionnaire, 20 responses were discarded: 11 were returned completely blank, six respondents put the same answers on all the Likert-scale items and three were partially answered (i.e. some questions in Section 2 and 3 were blank, and some left all of Sections 2 or 3 blank). Hence, the remaining 402 questionnaires were used for further data analysis. Consequently, the final response rate for this survey was 50.25%.

5.3.2.3 Response rate for Survey 3

In Survey 3, 407 questionnaires were returned out of the 800 distributed, which is a response rate of 50.9%. However, among the returned questionnaires, 18 responses were discarded: 12 of them were returned completely blank, four respondents put the same answers on all the Likert-scale items and two were partially answered (i.e. some questions in Section 2 and 3 were blank, and some left all of Sections 2 or 3 blank). Hence, the remaining 391 questionnaires were used for further data analysis. Consequently, the final response rate for this survey was 48.87%.

Overall, the response rates for the three surveys in this study were good. This could be due to the fact that most questionnaires were handed to people or sent by e-mail to participants to fill in questionnaires, with a reminder later to fill in the forms.

5.4 Outliers

In cleaning the data, detecting outliers is the second stage because the occurrence of an outlier can lead to the non-normality of data and distorted statistics (Hair et al, 1995; Tabachnick and Fidell, 2014). There are four reasons why outliers exist: incorrect entry of the data, failure to determine a missing indicator in the computer, a case is not from the intended population or a member is from the population but it has extreme values from a normal distribution (Tabachnick and Fidell, 2014). As mentioned previously in the methodology chapter, outliers are divided into two types: univariate outliers, which is when a case has an extreme value on one variable, and multivariate outliers, which is when a case has a strange combination of values for two or more variables (Kline, 2005; Tabachnick and Fidell, 2014). It is important to screen the measured variables for outliers (univariate and/or multivariate outliers) when structural equation modelling is used to analyse the data (Tabachnick and Fidell, 2014). Outliers can affect model fit because they affect the values of the estimated regressions coefficients (Field, 2013). Univariate outliers are checked by transforming the actual scores in the data set to standard scores, while the multivariate outliers are identified by Mahalanobis distance (Hair et al., 2013). For the current study, outliers were detected by univariate detection methods. Univariate outliers are easier to spot than multivariate outliers (Raykov and Marcoulides, 2008; Tabachnick and Fidell, 2014). Univariate detection, bivariate detection and multivariate detection methods can be used to detect outliers (Tabachnick and Fidell, 2014; Hair et al., 2006; Field, 2009). Also, the detection of univariate outliers helps to identify the cases with the maximum and minimum values by investigating the observation per variable (Hair et al., 2013). Initially, in detected univariate outliers, the data values are converted to standardised scores (Pallant, 2010); the cases with standardised values of more than ± 3.29 are potential outliers (Tabachnick and Fidell, 2014), though this also depends on the size of the sample. According to Hair et al. (2014), if small samples (less than 80) have a standard score value exceeding 2.5, there is a univariate outlier, while for larger samples this is raised to 4. For this study, the cut point was ± 3.29 for the standardised scores used in SPSS for identifying univariate outliers. According to Field (2009), the researcher should be aware of such values, as they bias the model fit of the research. Table 5.1 shows the results for univariate outliers in the three-survey sample.

5.4.1 Outliers in Survey 1

The results for univariate outliers in Survey 1 are presented in Table 4.3. Only four cases have extreme values that exceed the threshold (4, 6, 97 and 4) and are hence reported as outliers in more than one construct. Although the results shown in Table 5.1 indicate that there were a few outliers, the extremeness of this score did not impact the results, such as the mean and standard deviation. Hence, in this present research, the univariate outlier cases were retained and accommodated in the analysis. According to Hair et al. (2013), outliers should be retained; otherwise, the deletion of outliers can lead to cases with extreme Z scores that are aberrant and unrepresentative of any observations in the population. Outliers are neither beneficial nor problematic (Hair et al., 2006).

5.4.2 Outliers in Survey 2

The results for univariate outliers in Survey 2 are presented in Table 5.1. No cases have extreme values that exceed the threshold.

5.4.3 Outliers in Survey 3

The results for univariate outliers in Survey 3 are presented in Table 5.1. No cases have extreme values that exceed the threshold.

After completion of the outlier detection, it is necessary to ensure that the data are normally distributed before inferring results from the data.

Table 5.1 Univariate outlier detection results of three survey questionnaires

Survey 1, univariate outlier detection results		
Constructs	**Cases with Standardised Values Exceeding ±3.29**	**Standardised score (*z*)**
Expectations for training (EOT)	6	-4.31386
	4	-3.68962
	97	-3.48153
Trainee readiness (TR)	4	-3.70176
Expectations of training environment (ETE)	No cases	
Expectations of trainer's performance and behaviour (ETPB)	No cases	
Pre-training intervention and activities (PTA)	No cases	
Survey 2,univariate outlier detection results		
Constructs	**Cases with Standardised Values Exceeding ±3.29**	**Standardised score (*z*)**
Training methods (TM)	No cases	
Training environment(TE)	No cases	
Trainer performance and behaviour (TPB)	No cases	
Reaction (R)	No cases	
Learning (L)	No cases	
Intention to transfer learning (ITL)	No cases	
Survey 3, univariate outlier detection results		
Constructs	**Cases with Standardised Values Exceeding ±3.29**	**Standardised score (*z*)**
Training content (TE)	No cases	
Training objectives(TO)	No cases	
Behaviour(B)	No cases	
Results (Rs)	No cases	

5.5 Normality

Screening data—examining the normality of variables—is significant in multivariate analysis (Hair et al., 2014; Kline, 2005; Tabachnick and Fidell, 2014). The data were assessed to determine whether the observed variables were normally distributed: normal by graphical or statistical methods (Pallant, 2010; Tabachnick and Fidell, 2014). There are several approaches for assessing normality distribution

(Field, 2013; Tabachnick and Fidell, 2014; Hair et al., 2014): the frequency histogram, the kurtosis and skewness test, the Kolmogorov and Shapiro method, and a normal quantile- quantile (Q-Q) or probability plot P-P plots of data. The frequency histogram is critical for assessing normal distribution (Tabachnick and Fidell, 2014, Field, 2013); a normal distribution is shown if a normal bell curve covers the middle of the histogram and the two tails (Pallant, 2016). However, it is problematic if used with small samples, as the sample size increases, the sampling distribution becomes more normal (Field, 2013).

P-P plot normality is more helpful than a frequency histogram in this case, since P-P plot normality compares the cumulative distribution between the actual data values and the normal distribution (Hair et al., 2014). If the P-P plot figure indicates that the cases fall around a straight line, this indicates a normal distribution (Coakes, 2013). Quantile- quantile (Q-Q) is similar to probability plots P-P except that it plots the quantile of the sample data instead of every individual value in the data (Field, 2013). Thus, a reasonably straight line depicts a normal disputation (Pallant, 2016).

In statistical methods, the normality of the data distribution can be assessed by the kurtosis and skewness test, and the Kolmogorov and Shapiro method (Field, 2013; Tabachnick and Fidell, 2013; Hair et al., 2006). Therefore, in the current study, the kurtosis and skewness test, and the Kolmogorov and Shapiro method were used to assess the normality distribution of the data. Explanations of the methods for assessing the normality distribution are provided below.

Kolmogorov and Shapiro method

The Kolmogorov and Shapiro method examines normality distribution by "comparing scores of the sample to a normally distributed set of scores with the same mean and standard deviation" (Field, 2005; p. 93). This test show normality when p value more than .05 (Pallant, 2016), Field (2005) proposed that carrying out this test for a large sample can result in the non-normality of the data because of a slight deviation from normality. Hence, Coakes et al. (2009) suggested that the Kolmogorov and Shapiro (K-S) test is fit to assess small sample sizes of less than 100. However, the Kolmogorov and Shapiro (K-S) test was used for each construct. The results of Survey 1 indicated deviation ranges for the 406 responders from 0.102 to 0.200 at a significance level of $p < 0.001$, as shown in Table 5.2. Also, the results for Survey 2 indicate deviation ranges for the 402 responders from 0.088 to 0.207 at a significance level of $p < 0.001$, as shown in Table 5. 2. The results for Survey 3 indicate deviation ranges for the 309 responders from 0.116 and 0.244 to a significance level of $p < 0.001$, as illustrated in Table 5.2. The results of the Kolmogorov and Shapiro (K-S) test were found to be significant for all the variables in all three survey samples. The findings of this test do not show any departure from normality in the data due to the large samples (n1 = 406, n2 = 402 and n3 =391 in this study) and only a minor deviation from normality. This result is quite common in large samples (Pallant, 2016). This non-normality of data may be due to small deviations from normality that fall within the accepted range (Field, 2005); as a result, skewness and kurtosis are performed to examine normality by describing the distribution shape. In large sample data, the Kolmogorov and Shapiro (K-S) test should always be interpreted in conjunction with histogram, probability plots (P-P) or quantile-quantile (Q-Q) plot, and the result of skew and kurtosis due to it being sensitive to large sample size and minor deviations from normality (Field,2013).

Table 5.2 Results of Kolmogorov and Shapiro (K-S) test for normality of the three survey questionnaires

Survey 1, results of K-S test for normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	Df	Sig
Trainee readiness (TR)	.200	406	.000	.826	406	.000
Expectations of the training environment (ETE)	.168	406	.000	.948	406	.000
Expectations of trainer's performance and behaviour (ETPB)	.102	406	.000	.942	406	.000
Survey 2, results of K-S test for normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	Df	Sig
Training methods (TM)	0.088	402	.000	0.953	402	.000
Training environment (TE)	0.150	402	.000	0.864	402	.000
Trainer performance and behaviour(TPB)	0.207	402	.000	0.819	402	.000
Reaction (R)	0.135	402	.000	0.950	402	.000
Learning (L)	0.134	402	.000	0.927	402	.000
Intention of transfer learning (ITL)	0.196	402	.000	0.905	402	.000
Survey 3, results of K-S test for normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	Df	Sig
Training content (TC)	.158	391	.000	.873	391	.000
Training objectives (TO)	.244	391	.000	.849	391	.000
Behaviour (B)	.116	391	.000	.957	391	.000
Results (Rs)	.172	391	.000	.903	391	.000

Skewness and Kurtosis

Two significant components for assessing normality are skewness and kurtosis (Tabachnick and Fidell, 2014). If the values for the skewness and kurtosis of the calculated variables are zero, the distribution is normal (Tabachnick and Fidell, 2014). Accordingly, if positive or negative scores are shown, this indicates a deviation from normality. The range of values for acceptable deviations is influenced by the size of the sample. According to Hair et al. (2010), with a sample of less than 30, slight deviations can be serious, but slight deviations can be ignored in large sample sizes of more than 200. Kline (2005) posits the acceptable value for (kurtosis/skewness) distribution as ±3 for a given normal distribution. The cut-point value for the critical value of **z** for skewness and/or kurtosis is a distribution ±2.58 (Hair et al., 2010). In the present study, the acceptance value for the kurtosis and/or skewness distribution is ±3; the calculated skewness and kurtosis values, as shown in Table 5.3, fall within the acceptable range.

A normal distribution was confirmed for the data from Survey 1 through an assessment of the skewness and kurtosis. Prior to conducting the skewness and kurtosis test on Survey 1 data, data transformation techniques were applied in order to reduce skew values above ±3.29. Transformation of variables is done to enhance normality and linearity of distribution (Field, 2013). According to Kline, (2005) transformations are the original values converted using mathematical procedures into new ones that may be more normally distributed. Hence, all constructs had kurtosis values between -0.562 and 1.631 and skewness values between -0.174 and -1.306. All the constructs fall within the acceptable range (±3.29) and the results show univariate normality for the variables. All the variables were found to be normally distributed, as illustrated in Table 5.3.

Also, a normal distribution for the data for Survey 2 was confirmed through an assessment of the skewness and kurtosis. All variables still fall within the acceptable range at less than ±3; all the results in Table 5.3 shows the univariate normality of the variables of Survey 2.

Furthermore, a normal distribution for the data for Survey 3 was affirmed through an assessment of the skewness and kurtosis. All variables still fall within the acceptable range at less than ±3; all the results in Table 5.3 reveal the univariate normality of the variables of Survey 3.

In brief, all the variables in this current study (Table 5.3) were found to be normally distributed, however, the values for skewness and the kurtosis values were found to be mixed such that they were negative and positive but they fall within the acceptable range.

Table 5.3 Skewness and Kurtosis values of three survey sample

Survey 1 sample, Skewness and Kurtosis values

Construct	N	Min	Max.	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
ERT	**406**	1.63	5.00	4.2164	.60072	-1.306	.121	1.631	.242
SFBT	**406**	1.00	5.00	3.5082	.93569	-.497	121	.989	.242
LSBT	**406**	1.00	5.00	4.2081	.86831	-1.183	121	-.692	.242
ETE	**406**	1.25	5.00	3.6533	.91103	-.512	.121	-.562	.242
ETPB	**406**	1.33	5.00	3.7607	.88183	-.174	.121	-1.126	.242

Survey 2 sample, Skewness and Kurtosis values

Construct	Item	N	Min	Max.	Mean	Std. Deviation	Skewness		Kurtosis	
							Statistic	Std. Error	Statistic	Std. Error
TM	**TM01**	**402**	1	5	3.87	.972	-.301	.122	-.952	.243
	TM02	**402**	1	5	3.88	.999	-.452	.122	-.833	.243
	TM03	**402**	1	5	3.15	1.083	.128	.122	-.638	.243
	TM04	**402**	1	5	3.05	1.199	.086	.122	-.905	.243
	TM05	**402**	1	5	2.97	1.273	.211	.122	-.918	.243
	TM06	**402**	1	5	3.86	1.013	-.345	.122	-1.017	.243
	TM07	**402**	1	5	3.52	.970	-.074	.122	-.898	.243
	TM08	**402**	1	5	3.35	1.106	-.023	.122	-1.129	.243
	TM09	**402**	1	5	2.96	1.156	.141	.122	-.826	.243
	TM10	**402**	1	5	2.70	1.279	0.280	.122	-0.800	.243
TE	**TE01**	**402**	2	5	4.36	.899	-1.217	.122	.421	.243
	TE02	**402**	2	5	3.98	.971	-.519	.122	-.827	.243
	TE03	**402**	2	5	3.83	.796	-.156	.122	-.560	.243
	TE04	**402**	2	5	4.03	.926	-.647	.122	-.477	.243
	TE05	**402**	2	5	3.91	.986	-.389	.122	-1.001	.243

	TE06	**402**	2	5	4.05	.889	-.632	.122	-.395	.243
	TE07	**402**	2	5	3.98	.866	-.605	.122	-.224	.243
	TE08	**402**	2	5	4.10	.938	-.569	.122	-.893	.243
	TE09	**402**	2	5	4.00	.977	-.488	.122	-.956	.243
	TE10	**402**	2	5	3.90	.857	-.399	.122	-.496	.243
	TE11	**402**	1	5	3.31	1.098	.080	.122	-.710	.243
	TE12	**402**	2	5	3.98	.907	-.556	.122	-.506	.243
TBP	**TPB01**	**402**	2	5	3.97	.983	-.462	.122	-.961	.243
	TPB02	**402**	2	5	3.96	.881	-.309	.122	-.882	.243
	TPB03	**402**	2	5	3.94	.924	-.329	.122	-.950	.243
	TPB04	**402**	2	5	3.90	.979	-.313	.122	-1.083	.243
	TPB05	**402**	2	5	3.83	.940	-.308	.122	-.860	.243
	TPB06	**402**	2	5	3.84	.900	-.119	.122	-1.031	.243
	TPB07	**402**	2	5	3.85	.881	-.189	.122	-.870	.243
	TPB08	**402**	2	5	3.81	.896	-.136	.122	-.923	.243
	TPB09	**402**	2	5	3.87	.953	-.255	.122	-1.037	.243
R	**R01**	**402**	1	5	3.87	.913	-.191	.122	-.923	.243
	R02	**402**	2	5	3.83	.969	-.333	.122	-.917	.243
	R03	**402**	1	5	3.61	1.096	-.316	.122	-.796	.243
	R04	**402**	1	5	2.61	1.267	.401	.122	-.867	.243
L	**L01**	**402**	1	5	3.28	1.227	-.110	.122	-.923	.243
	L02	**402**	1	5	2.43	.956	.451	.122	.197	.243
	L03	**402**	1	5	3.52	1.146	-.030	.122	-1.103	.243
ITL	**EB01**	**402**	1	5	3.85	.992	-.519	.122	-.619	.243
	EB02	**402**	1	5	3.75	1.168	-.569	.122	-.518	.243

Survey 3 sample, Skewness and Kurtosis values										
Construct	**Item**	**N**	**Min**	**Max.**	**Mean**	**Std. Deviation**	**Skewness**		**Kurtosis**	
							Statistic	**Std. Error**	**Statistic**	**Std. Error**
TC	**TC1**	**391**	1	5	4.05	1.096	-1.143	.123	.512	.246
	TC2	**391**	1	5	3.93	1.170	-.902	.123	-.192	.246
	TC3	**391**	2	5	3.99	1.096	-.500	.123	-.450	.246
	TC4	**391**	2	5	4.24	.851	-.646	.123	-.846	.246
	TC5	**391**	3	5	4.29	.692	-.459	.123	-.857	.246
TO	**TO1**	**391**	3	5	4.11	.698	-.153	.123	-.944	.246
	TO2	**391**	2	5	4.00	1.052	-.663	.123	-.833	.246
	TO3	**391**	2	5	3.84	.881	-.380	.123	-.551	.246
B	**B1**	**391**	2	5	4.32	.883	-.931	.123	-.434	.246
	B2	**391**	2	5	4.08	.838	-.671	.123	-.098	.246
	B3	**391**	2	5	3.92	.845	-.617	.123	-.039	.246
	B4	**391**	2	5	3.86	.926	-.306	.123	-.859	.246
	B5	**391**	2	5	3.73	.939	-.121	.123	-.952	.246
	B6	**391**	2	5	3.38	.961	.289	.123	-.853	.246
Rs	**Rs1**	**391**	1	5	3.74	1.137	-.842	.123	-.043	.246
	Rs2	**391**	2	5	3.84	1.067	-.533	.123	-.953	.246
	Rs3	**391**	2	5	4.04	.854	-.531	.123	-.474	.246
	Rs4	**391**	1	5	3.84	.802	-.150	.123	-.466	.246

Note: **PTA=** Pre-training intervention and activities, **TR=** Trainee readiness, **ETO** = Expectations for training outcomes, **ETE=** Expectations of training environment, **ETPB=** Expectations of trainer performance and behaviour, **TM** =Training methods, **TE=** Training environment, **TPB=** Trainer performance and behaviour, **R=** Reaction, **L=** Learning, **ITL** =Intention of transfer learning, **TC=** Training content, **TO** =Training objectives, **B=** Behaviour, **Rs=** Results.

For multivariate normality, multi-collinearity is used for the multivariate analysis of the data in the current study. A description and assessment of the normality of the data based on the multicollinearity assumption is provided below.

Multicollinearity assumption

Multicollinearity exists because what appear separate variables actually evaluate the same thing (Kline, 2005). Multicollinearity refers to “a situation in which two or more variables are very closely linearly related” (Field, 2013, p. 879). Multicollinearity is computed using squared multiple correlations (SMC) and a value of 0.090 or higher indicates the existence of multicollinearity (Tabchnick and Fidell, 2014). According to Hair et al. (2010), two components of multicollinearity are used to test the pairwise and multiple variable correlations: tolerance and the variance inflation factor (VIF). Tolerance is the amount of variability in the independent factors that is not explained by the other independent factors (Hair et al., 2010). It measures multicollinearity (1-SMC), with an acceptable value equal to 0.1, while the other predictors explain 90% of the measured variable (Hair et al., 2010; Tabachnick and Fidell, 2014). VIF shows whether a predictor has a strong linear relationship with the other predictors (Field, 2013). It is calculated as the inverse of tolerance (1/tolerance).

There is no agreement regarding the minimum score of a tolerance or variance inflation factor (VIF) to represent multicollinearity (Field, 2013). The acceptance value to show multicollinearity is that a tolerance should be less than 0.10 or a variance inflation factor (VIF) greater than 10 (Kline, 2005; Field, 2013; Pallant, 2016). A tolerance of less than 0.10 and/or a variance inflation factor (VIF) of greater than 10 indicates that there is a serious multicollinearity problem or concern (Field, 2013; O'Brien, 2007). Also, multicollinearity could be indicated if a tolerance shows less than 0.20 or variance inflation factor (VIF) shows less than 5 (Field, 2013). According to (Field, 2013 and Kline, 2005), in this current study, the rule that the tolerance value should be less than 0.1 and variance inflation factor (VIF) greater than 10 to diagnose multicollinearity, the results are presented in Table 5.4,. In the present research, all three surveys have a variance inflation factor (VIF) of less than 10 (e.g. Survey 1 = 2.232, Survey 2 = 1.056 and Survey 3 = 1.027). Based on the description above, this would indicate no serious multicollinearity between variables.

Table 5.4 The collinearity diagnostic of three survey questionnaires

Survey 1, the collinearity diagnostic								
1	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.		Collinearity Statistics
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	2.473	.189	.381	13.066	.000		
	ETPB	.260	.038	.381	6.769	.000	.606	1.649
	TR	.162	.031	.234	5.195	.000	.945	1.058
	ETE	.083	.043	.126	1.923	.055	.448	2.232
	PTA	-.063	.035	-.098	-1.799	.073	.655	1.527
Survey 2, the collinearity diagnostic								
1	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.		Collinearity Statistics
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	9.508	1.496		6.355	.000		
	TM	.040	.022	.091	1.807	.071	.960	1.042
	TE	.031	.023	.067	1.333	.183	.978	1.022
	TPB	.046	.030	.077	1.520	.129	.930	.952
	a. Dependent Variable: R							
2	Model							
	(Constant)	2.818	1.299		2.170	.031		

	R	.113	.041	.134	2.726	.007	.976	1.024
	TM	.012	.018	.033	.672	.502	.952	1.051
	TE	.053	.019	.136	2.756	.006	.974	1.027
	TPB	.055	.025	.110	2.194	.029	.947	1.056
	a. Dependent Variable: L							
3	Model							
	(Constant)	7.286	.914		7.973	.000		
	L	.038	.036	.053	1.037	.300	.955	1.047
	TM	.015	.013	.056	1.089	.277	.958	1.044
	TE	-.006	.014	-.020	-.397	.691	.958	1.044
	TPB	-.007	.018	-.021	-.398	.691	.939	1.065
	a. Dependent Variable: ITL							
	Survey 3, the collinearity diagnostic							
1	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.		Collinearity Statistics
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	18.584	1.497		12.414	.000		
	TC	.104	.054	.096	1.919	.056	.998	1.002
	TO	.215	.087	.124	2.477	.014	.998	1.002
	a. Dependent Variable: B							
2	Model							
	(Constant)	10.055	1.465		6.862	.000		
	B	.130	.042	.156	3.096	.002	.974	1.027
	TC	.071	.045	.079	1.570	.117	.988	1.012
	TO	.078	.073	.054	1.070	.285	.982	1.018
	a. Dependent Variable: Rs							

Note: **PTA=** Pre-training intervention and activities, **TR** =Trainee readiness, **ETO =** Expectations for training outcomes, **ETE=** Expectations for the training environment, **ETPB =** Expectations of trainer performance and behaviour, **TM=** Training methods, **TE=** Training environment, **TPB=** Trainer performance and behaviour, **R=** Reaction, **L=** Learning, **ITL=** Intention to transfer learning , **TC =** Training content, **TO=** Training objectives , **B=** Behaviour, **Rs=** Results.

After completing the screening and cleaning of the data and applying the multivariate analysis techniques, the data were ready for the next stage of analysis, which was the reliability and validity assessment. According to Churchill (1979), it is important to examine the reliability and validity of the collected data after screening the data. This will be explained in the reliability assessment section.

5.6 Demographic profile of the respondents to the three surveys

This section presents the demographic information of the respondents to the three surveys: gender, age, highest level of education, work location, level of work and department. As shown in Table 5.5, the following provides the basic descriptive statistics and frequency distributions from the three completed questionnaires.

5.6.1 Gender

The results of Survey 1 (Table 5.5) reveal that the majority of the participants were male (84%), while 16% of the participants were female.

Table 5.5 shows the results of Survey 2; the majority of the participants were male (84.1%), while 15.9% were female.

In Survey 3, as shown in Table 5.5, most respondents were male (83.9%), while 16.1% of the participants were female.

5.6.2 Age

Table 5.5 shows that in Survey 1 the majority (i.e. 67.5% of respondents) were less than 30 years of age. The second highest numbers of participants (24.6%) were between 31 and 40 years old.

In Survey 2, the majority of the respondents were less than 30 years old (67.9%), while 24.4% were between 31 and 40 years old.

The results for Survey 3 show that the majority (i.e. 68.5% of respondents) were less than 30 years old. The second highest numbers of participants (24.0%) were between 31 and 40 years old.

5.6.3 Highest level of education

The largest number of respondents in Survey 1 reported that their highest level of education was college qualification (43.1%), thought this was followed closely by a bachelor's degree (40.4%).

The results for the participants' highest level of education in Survey 2 is that the majority of respondents held a college degree (42.8%), followed by a bachelor's degree (40.5%).

In Survey 3, the largest number of participants had college qualifications (43.5%), followed by a bachelor's degree (40.7%).

5.6.4 Years working full-time at their company

For Survey 1, the number of years that the respondents worked full-time at their companies, the highest percentage of respondents had 0–5 years of full-time experience (70.4%), while 10.8% of the respondents had worked for their company full-time for 6–10 years.

For Survey 2, the number of years that the respondents worked full-time at their companies was mostly 0–5 years of full-time experience (70.6%), while 10.9% of the respondents had 6–10 years of full-time service.

For Survey 3, the number of years that the participants worked full-time at their companies was 0–5 years of full-time experience (72.1%), while 11% of the respondents had 6–10 years of full-time experience.

5.6.5 Work location

Four categories of work location were presented to the respondent, for them to select the category that best reflected their work location. For Survey 1 (Table 5.5), the largest percentage of respondents selected field-work (54.2%), while the second largest number of respondents selected head office, (28.1%) or selected both field and administrative (12.6%). A small number of respondents worked in other work locations (5.2%).

In Survey 2, 53.7% of the respondents selected field-work, while 28.5% of the respondents worked at the head office and 12.7% selected both field and administrative. Only 5.2% worked at other work locations.

In Survey 3, 54.2% of the respondents selected field-work, while 28.9% worked at the head office and 12.3% selected both field and administrative. Only 4.6% worked at a different location.

5.6.6 Level of work

Table 5.5 presents the Survey 1 results for the respondents' level of work at their work locations. The highest percentages of respondents were field workers (39.7%), while 28.1% were middle management and 11.6% were senior managers.

In Survey 2, the highest numbers of respondents were field workers (39.8%), while 28.4% were middle management and 11.2% were senior managers.

In Survey 3, the highest percentages of participants were field workers (40.9%), while 28.9% were middle management and 10.5% were senior managers.

5.6.7 Department

Table 5.5 shows the work departments of the respondents to the three surveys. The results for Survey 1 show that the highest percentages of respondents were from the operations department (26.1%), while 10.6% were from the engineering department.

In Survey 2, the largest numbers of respondents were from the operations department (26.4%), while 11.7% were from the engineering department.

In Survey 3, the largest numbers of respondents were from the operations department (27.1%), while 11.0% were from the engineering department.

Table 5.5 The demographic details of the respondents in the three main survey sample

Survey 1, respondents (n=406), demographic characteristics			
Variable	**Category**	**Frequency**	**%**
Gender	Female	65	16.0
	Male	341	84.0
Age	Under 30	274	67.5
	31–40	100	24.6
	41–50	20	4.9
	51–60	8	2.0
	61 or above	4	1.0
Highest educational achievement	Less than high school	1	.2
	High school	10	2.5
	College	175	43.1
	Bachelor	164	40.4
	Master	46	11.3
	PhD	0	0
	Other	10	2.5
Years working full time at this company	0–5 years	286	70.4
	6–10 years	44	10.
	11–15 years	33	8.1
	16–20 years	23	5.7
	21 years and more	20	4.9
Work location	Head office	114	28.1
	Field-administrative	51	12.6
	Field work	220	54.2
	Other	21	5.2
Level of work	Senior management	47	11.6
	Middle management	114	28.1
	Basic administrative	84	20.7
	Field workers	161	39.7
Department	Finance	3	.7
	Human resources	11	2.7
	Training	19	4.7
	Administrative	2	.5
	Operations	106	26.1
	Production	4	1.0
	Engineering	43	10.6
	Services	7	1.7
	Sales, commercial and marketing	5	1.2
	Supply chain	3	.7
	Security	0	0

	Technical, information systems, ICT and programming	39	9.6
	Exploration	3	.7
	Quality measurements instrumentation	8	2.0
	Drilling	7	1.7
	Maintenance	29	7.1
	Process	6	1.5
	Project	17	4.2
	Fire	4	1.0
	Lab analyst	2	.5
	Studies	3	.7
	Electronics and communication	2	.5
	Electrical	10	2.5
	Corporate planning	6	1.5
	Health and Safety Environment (HSE)	38	9.4
	Social responsibility	3	.7
	Wells	9	2.2
	General management (GM)	17	4.2

Survey 2, respondents (n=402), demographic characteristics

Variable	Category	Frequency	%
Gender	Female	64	15.9
	Male	338	84.1
Age	Under 30	273	67.9
	31–40	98	24.4
	41–50	19	4.7
	51–60	8	2.0
	61 or above	4	1.0
Highest educational achievement	Less than high school	1	.2
	High school	10	2.5
	College	172	42.8
	Bachelor	163	40.5
	Master	46	11.4
	PhD	0	0
	Other	10	2.5
Years working full time at this company	0–5 years	284	70.6
	6–10 years	44	10.9
	11–15 years	33	8.2
	16–20 years	23	5.7
	21 years and more	18	4.5
Work location	Head office	114	28.4
	Field-administrative	51	12.7
	Field work	216	53.7
	Other	21	5.2
Level of work	Senior management	45	11.2
	Middle management	114	28.4
	Basic administrative	83	20.6
	Field workers	160	39.8
Department	Finance	3	0.7
	Human resources	11	2.6
	Training	19	4.9
	Administrative	2	.5
	Operations	106	26.4
	Production	3	0.7
	Engineering	43	10.7
	Services	7	1.7
	Sales, commercial and marketing	5	1.2
	Supply chain	2	0.5

	Security	0	0
	Technical, information systems, ICT and programming	39	9.7
	Exploration	3	0.7
	Quality measurements instrumentation	8	2.0
	Drilling	7	1.7
	Maintenance	29	7.2
	Process	6	1.5
	Project	17	4.2
	Fire	4	1.0
	Lab analyst	2	0.5
	Studies	2	0.5
	Electronics and communication	2	0.5
	Electrical	9	2.2
	Corporate planning	6	1.5
	Health and Safety Environment (HSE)	38	9.5
	Social responsibility	3	0.7
	Wells	8	2.0
	General Management(GM)	16	4.0

Survey 3, respondents (n=391), demographic characteristics

Variable	**Category**	**Frequency**	**%**
Gender	Female	63	16.1
	Male	328	83.9
Age	Under 30	268	68.5
	31–40	94	24.0
	41–50	18	4.6
	51–60	7	1.8
	61 or above	4	1.0
Highest educational achievement	Less than high school	1	.3
	High school	8	2.0
	College	170	43.5
	Bachelor	159	40.7
	Master	45	11.5
	PhD	0	0
	Other	8	2.0
Years working full time at this company	0–5 years	282	72.1
	6–10 years	43	11.0
	11–15 years	31	7.9
	16–20 years	17	4.3
	21 years and more	18	4.6
Work location	Head office	113	28.9
	Field-administrative	48	12.3
	Field work	212	54.2
	Other	18	4.6
Level of work	Senior management	41	10.5
	Middle management	113	28.9
	Basic administrative	77	19.7
	Field workers	160	40.9
Department	Finance	3	.8
	Human resources	11	2.8
	Training	18	4.6
	Administrative	2	.5
	Operations	106	27.1
	Production	3	.8

	Engineering	43	11.0
	Services	7	1.8
	Sales, commercial and marketing	5	1.3
	Supply chain	2	.5
	Security	0	0
	Technical, information systems, ICT and programming	37	9.5
	Exploration	3	.8
	Quality measurements instrumentation	8	2.0
	Drilling	7	1.8
	Maintenance	28	7.2
	Process	6	1.5
	Project	16	4.1
	Fire	4	1.0
	Lab analyst	2	.5
	Studies	2	.5
	Electronics and communication	1	.3
	Electrical	9	2.3
	Corporate planning	6	1.5
	Health and Safety Environment (HSE)	38	9.7
	Social responsibility	3	.8
	Wells	6	1.5
	General management (GM)	15	3.8

5.7 General features before and after the training programme in Surveys 1 and 2

This section represents the features before and after the training programme in Surveys 1 and 2.

5.7.1 Features of training programme on advance of training in Survey 1 sample

Table 5.6 shows the results for Survey 1 regarding the general training features of the training programme: type of training, length of notice in advance of training, regularity of training and method of being informed about training. The largest number of respondents received compulsory training (84%). In terms of being informed in advance of training, 40.6 % were informed from 2 to 5 days, 36.2% were given from over 15 days, while 13.3% were informed 1 day in advance of training.

The highest percentage of participants had been offered this training once a year (33.7%), followed by 23.4% had been offered this training once a week, 19.5 % had been offered it 2–3 times a year, while only .5% had never been offered regular training. The highest percentage of respondents were informed by only e-mail (90.6%), while 64% were informed by only face to face and 3% were informed by multi methods such as e-mail, face to face, manager announcement, letter and flier/poster.

Table 5.6 Training feature on advance training, Survey 1respondents (n=406)

Variable	Category	Frequency	%
This training is	Optional	65	16
	Compulsory	341	84
Time given in advance of training was	1 day	54	13.3

	2-5 days	165	40.6
	6-14days	40	9.9
	Over 15 days	147	36.2
This training is regularly offered	Once a week	71	17.5
	Once a month	95	23.4
	2-3 times a year	79	19.5
	Once a year	137	33.7
	Less often	22	5.4
	Never	2	.5
I was informed about this training by	E-mail	368	90.6
	Face-to-face	260	64.0
	Manager announcement	92	22.7
	Letter	30	7.4
	Flier/poster	24	5.9
	All of above	12	3.0
	Other	42	10.3

5.7.2 Training facilities and training methods in Survey 2

Table 5.7 shows the results for the training facilities and training methods in Survey 2. In order to gain an in-depth understanding of the implementation of the programmes, two questions were asked: Which of the elements of the training facilities was available? Which of the training methods are used in the health and safety training programme? With regards to the availability of training facilities in the training programme, most respondents confirmed that an overhead projector was available (93.8%), while 6.2% did not have one. Only 9.7% confirmed the availability of other training aids, such as films and computers, while the majority responded that other training aids were not available in this training programme (90.3%). With regards to the training methods used in the health and safety training, the majority of the respondents affirmed that class lecture/teaching was mostly used to deliver the training material (93.8%), while only 6.2% indicated that this method was not the primary method used. Only 9.5% indicated that other training methods, such as group discussion, role playing, coaching, and instruction were used in the programme, while the majority indicated that such methods were not used (90.5%).

Table 5.7 Training facilities and training methods in survey 2 sample (n=402)

Variable	**YES**		**NO**	
	Frequency	**%**	**Frequency**	**%**
Training facilities				
Audio-visual equipment e.g. Overhead projector	377	93.8	25	6.2
Audio-visual equipment e.g. Flipchart	291	72.4	111	27.6
• Audio-visual equipment e.g. Video	316	78.6	86	21.4
• Audio-visual equipment e.g. Power point slides	362	90.0	40	10.0
Other training aids	39	9.7	363	90.3
Training methods	**YES**		**NO**	
	Frequency	**%**	**Frequency**	**%**

Class lecture/teaching	377	93.8	25	6.2
Workshop	114	28.4	288	71.6
Case study	206	51.2	196	48.8
Simulation	141	35.1	261	64.9
Other methods	38	9.5	364	90.5

5.8 Descriptive statistics of the construct items of the three surveys sample

This section provides descriptive statistics of the three surveys constructs.

5.8.1 Descriptive statistics of the survey measurements for Survey 1

Table 5.8 presents descriptive statistics of the Survey 1 constructs. All items were rated on a five-point Likert scale with a score of 5 indicating ‘strongly agree’ and a score of 1 indicating ‘strongly disagree’. The mean score for all five variables are as follows: pre-training interventions and activities ranged between 3.36 and 3.79, trainee readiness is between 4.05 and 4.37, expectations for training outcomes is between 4.13 and 4.37, expectations of the training environment is between 3.49 and 3.75, and expectations of trainer performance and behaviour is between 3.56 and 4.03. All items of the constructs have a mean greater than the neutral point (3), which indicates that the participants mostly agreed with the items. Table 5.8 provides a summary of the mean and standard deviation for all items in Survey 1.

5.8.2 Descriptive statistics of the survey measurements for Survey 2

The descriptive statistics for the Survey 2 constructs are presented in Table 5.8. All items were rated on a five-point Likert scale with a score of “5” indicating “strongly agree” and a score of “1” indicating “strongly disagree”. The mean scores for all six variables are as follows: training methods ranged between 3.88 and 2.70, training environment ranged between 4.36 and 3.31, trainer performance and behaviour ranged between 3.97 and 3.81, reaction ranged between 3.87 and 2.61, learning ranged between 3.52 and 2.43 and intention to transfer learning ranged between 3.85 and 3.75. The results indicated that trainer performance and behaviour, and intention to transfer learning show a mean that is greater than the neutral point (3), which indicates that the respondents mostly rank with ‘agree with’ on these items. However, for training methods, training environment and reaction, the mean ranged from the neutral point (3) to above the neutral point (3), which indicates that the response was between neutral and agreement with these items. While for learning, the mean ranged from below neutral point (3) to above the neutral point (3), which indicates that the response was between disagreement and agreement with these items. Table 5.8 presents a summary of the mean and standard deviation of all items in Survey 2.

5.8.3 Descriptive statistics of the survey measurements for Survey 3

Table 5.8 presents descriptive statistics for the Survey 3 constructs. All items were rated on a five-point Likert scale with a score of "5" indicating "strongly agree" and a score of "1" indicating "strongly disagree". The mean score for all four variables are as follows: training content ranged between 3.93 and 4.29, training objectives ranged between 3.84 and 4.11, behaviour ranged between 3.38 and 4.32 and results ranged between 3.74 and 4.04. The results show that training content, training objectives and results have means greater than the neutral point (3), which suggests that the participants mostly rate these reasonably highly with these items. The results indicate that behaviour ranged from the neutral point (3) to above the neutral point, which shows that the respondents were neutral toward or in agreement with this item. Table 5.8 presents a summary of the mean and standard deviation of all items in Survey 3.

Table 5.8 Descriptive statistics of three survey sample

Survey 1 measurements, descriptive statistics		
Items of Pre-training intervention and activities (**PTA**) constructs.		
	Mean Statistic	Std. Deviation Statistic
PTA 1	3.36	1.333
PTA 2	3.79	.922
PTA 3	3.38	1.037
Items of Trainee readiness (**TR**) construct.		
TR 1	4.05	1.087
TR 2	4.37	.896
Items of Expectation of the training environment **(ETE)** construct.		
	Mean Statistic	Std. Deviation Statistic
ETE1	3.71	1.054
EET2	3.75	.974
ETE3	3.67	1.064
ETE4	3.49	1.196
Items of Expectations for training outcomes (**ETO**) construct.		
	Mean Statistic	Std. Deviation Statistic
ERT1	4.37	.777
ERT2	4.30	.821
ERT3	4.23	.866
ERT4	4.17	.853
ERT5	4.22	.898
ERT6	4.16	.907
ERT7	4.15	.913
ERT8	4.13	.897
Items of Expectations of trainer's performance and behaviour (**ETPB**) construct.		
	Mean Statistic	Std. Deviation Statistic
ETPB 1	4.03	1.041
ETPB 2	3.87	1.057
ETPB 3	3.70	1.095
ETPB 4	3.65	1.153
ETPB5	3.83	1.019
ETPB 6	3.56	1.296
Survey 2 measurements, descriptive statistics		
Items of Training methods **(TM) construct**		
	Mean Statistic	Std. Deviation Statistic
TM1	3.87	.972
TM2	3.88	.999

TM3	3.15	1.083
TM4	3.05	1.199
TM5	2.97	1.273
TM6	3.86	1.013
TM7	3.55	.970
TM8	3.49	1.106
TM9	3.06	1.156
TM10	2.70	1.279
Items of Training environment **(TE)** construct		
	Mean Statistic	Std. Deviation Statistic
TE1	4.36	0.899
TE2	3.98	0.971
TE3	3.83	0.796
TE4	4.03	0.926
TE5	3.91	0.986
TE6	4.05	0.889
TE7	3.98	0.866
TE8	4.10	0.938
TE9	4.00	0.977
TE10	3.90	0.857
TE11	3.31	1.098
TE12	3.98	0.907
Items of Trainer performance and behaviour **(TPB)** construct		
	Mean Statistic	Std. Deviation Statistic
TPB1	3.97	0.983
TPB2	3.96	0.881
TPB3	3.94	0.924
TPB4	3.90	0.979
TPB5	3.83	0.940
TPB6	3.84	.900
TPB7	3.85	0.881
TPB8	3.81	0.896
TPB9	3.87	0.953
Items of Reaction **(R)** construct		
	Mean Statistic	Std. Deviation Statistic

R1	3.87	.913
R2	3.83	.969
R3	3.61	1.096
R4	2.61	1.267
Items of Learning **(L)** construct		
	Mean Statistic	Std. Deviation Statistic
L1	3.28	1.227
L2	2.43	.956
L3	3.52	1.146
Items of Intention of transfer learning (**ITL**)construct		
	Mean Statistic	Std. Deviation Statistic
ITL 1	3.85	.992
ITL 2	3.75	1.168
Survey 3 measurements, descriptive statistics		
Items of Training content **(TC)** construct		
	Mean Statistic	Std. Deviation Statistic
TC1	4.05	1.096
TC2	3.93	1.170
TC3	3.99	1.096
TC4	4.24	.851
TC5	4.29	.692
Items of Training objectives **(TO)** construct		
	Mean Statistic	Std. Deviation Statistic
TO1	4.11	.698
TO2	4.00	1.052
TO3	3.84	.881
Items of Behaviour **(B)** construct		
	Mean Statistic	Std. Deviation Statistic
B1	4.32	.883
B2	4.08	.838
B3	3.92	.845
B4	3.86	.926
B5	3.73	.939
B6	3.38	.961
Items of Results **(Rs)** construct		
	Mean Statistic	Std. Deviation Statistic
Rs1	3.74	1.137
Rs2	3.84	1.067
Rs3	4.04	.854
Rs4	3.84	.802

5.9 Reliability assessment

This section presents the reliability assessment of the three-survey sample. First, Table 5.9 presents the Cronbach's alpha figures for all five constructs in Survey 1 before attending training. The results showed that all constructs had reliability approximately equal to or above 0.70. The values ranged between 0.684 and 0.869, as shown in Table 5.9. If the Cronbach's alpha is 0.70–0.90, this represents high reliability (Hinton et al., 2004). Hence, the Cronbach's alpha for the Survey 1 data reports high reliability for all the constructs, which highlights the internal consistency of the scales. Second, the value of the Cronbach alpha coefficient for each construct in Survey 2 (immediately after completing the training programme) is presented in Table 5.9. Almost all the Cronbach's alpha coefficients for Survey 2 data were between 0.715 and 0.856, which demonstrates high internal reliability in measuring the different observed variables under each construct. Finally, the Cronbach's alpha for the constructs of the Survey 3 data are presented in Table 5.9. Almost all the Cronbach's alpha coefficients for Survey 3 data were between 0.760 and 0.826, which demonstrates high internal reliability for measuring the different observed variables under each construct.

Table 5.9 Reliability statistics of constructs in three survey sample

Survey 1, reliability statistics of constructs				
Construct	**Items**	**Cronbach's Alpha**	**Cronbach's Alpha of survey data**	**Type**
Pre-training intervention and activities (**PTA**)	**3**	.795	.886	High reliability
Trainee readiness (**TR**)	**2**	.684		
Expectations for training outcomes (**ETO)**	**8**	.854		
Expectations for the training environment (**ETE**)	**4**	.869		
Expectations for trainer performance and behaviour (**ETPB**)	**6**	.881		
Survey 2, reliability statistics of constructs				
Construct	**Items**	**Cronbach's Alpha**	**Cronbach's Alpha of survey data**	**Type**
Training methods (TM)	**10**	.852	.831	High reliability
Training environment (TE)	**12**	.856		
Trainer performance and behaviour(TPB)	**9**	.821		
Reaction (R)	**4**	.737		
Learning (L)	**3**	.730		
Intention of transfer learning (ITL)	**2**	.715		
Survey 3, reliability statistics of constructs				
Construct	**Items**	**Cronbach's Alpha**	**Cronbach's Alpha of survey data**	**Type**
Training content (TC)	**5**	.792	.757	High reliability
Training objectives (TO)	**3**	.760		
Behaviour (B)	**6**	.796		
Results (Rs)	**4**	.826		

5.10 Factor analysis

For the factor analysis of the data, exploratory factor analysis (EFA) and/or confirmatory factor analysis (CFA) were mostly used. However, the present study applies only (CFA) to reduce the data, as both (EFA) (CFA) aim to accomplish data reduction. To carry out (CFA), it is critical to examine Kaiser-Meyer-Olkin (KMO) and Bartlett's test. According to Hinton et al. (2004), Kaiser-Meyer-Olkin (KMO) and Bartlett's test results will show if it is suitable for proceeding with (CFA). Kaiser-Meyer-Olkin (KMO) examines whether the variables in a given sample are adequate to correlate, and Bartlett's test, which is a sphericity test, proceeds to confirm the relationship between the variables (Hair et al., 2010).

5.10.1 Kaiser-Meyer-Olkin (KMO) and Bartlett's test for the three-survey sample

Table 5.10 reveals the results of the Kaiser-Meyer-Olkin (KMO) and the Bartlett's test of sphericity in the current study. The results for Survey 1 indicate that the value of the Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy was 0.898 and that the Bartlett's test of sphericity was $p < 0.05$). The results for Survey 2 show that the value of the Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy was 0.794 and that the Bartlett's test of sphericity was $p < 0.05$). The results for Survey 3 reveal that value of the Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy was 0.728 and that the Bartlett's test of sphericity was $p < 0.005$. The minimum value required for the Kaiser-Meyer-Olkin (KMO) is 0.60, while the Bartlett's test should have a value of $p < 0.05$ (Hair et al., 2010). Hence, the results of Kaiser-Meyer-Olkin (KMO) and the Bartlett's test of sphericity in the current study indicated the appropriateness of the sample data for factor analysis.

Table 5.10 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of three survey sample

Survey 1, KMO and Bartlett's test	
Result	**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.898
Approx. Chi-Square	4784.856
Bartlett's Test of Sphericity df	276
Sig.	.000
Survey 2, KMO and Bartlett's test	
Result	**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.794
Approx. Chi-Square	5235.617
Bartlett's Test of Sphericity df	780
Sig.	.000
Survey 3, KMO and Bartlett's test	
Result	**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.728
Approx. Chi-Square	2760.836
Bartlett's Test of Sphericity df	153
Sig.	.000

5.11 Structural equation modelling

As indicated in Chapter Four, structural equation modelling uses AMOS v.21 to validate the hypotheses and to explain the relationships among the specified variables in the proposed conceptual model. SEM that is used to analyse the proposed theoretical framework of study is required for large samples. Therefore, the sample size of 250 or more and missing data less than 10% are sufficient to run structural equation modelling (Hair et al., 2010). As this study uses SEM to analyse the proposed conceptual model, it has distributed 800 surveys for each of the three surveys. The process for structural equation modelling involves two types of models: the measurement model CFA and the structural model (path diagram) (Hair et al., 2014). While the measurement model uses CFA to validate the relationship between the indicator (observed) and latent (unobserved) factors, the structural model represents the relationship between the dependent and independent variables in order to test the hypotheses (Hair et al., 2010). The next few sections will present the results of the CFA and the structural model for the three survey questionnaires in this research.

5.11.1 Confirmatory factor analysis

CFA, using AMOS v.21, was conducted on the measurement model to assess the unidimensionality, reliability and validity of the measures in this research. Hair et al. (2014) recommended that the validity of the CFA should be tested in two ways: 1) goodness of fit indices and (2) construct validity. Hence, in this study, the assessment of the validity of the measurement model was performed in two stages: (1) goodness of fit indices and (2) validity evaluation.

5.11.1.1 Goodness of fit indices

The initial (CFA) for Survey 1 (before training) in this study was performed on the measurement model with 5 constructs and 23 items. As depicted in Figure 5.1, which shows the initial hypothesised measurement model for Survey 1, these constructs are expectations for training outcomes (ETO), pre-training intervention and activities (PTA), trainee readiness (TR), expectations of the training environment (ETE) and expectations of trainer's performance and behaviour (ETPB). In this study, each construct was loaded with its measurement item and was tested using CFA.

In this study, the initial (CFA) for Survey 2 (immediately after completion of the training) was conducted on the measurement model with 6 constructs and 40 items. As depicted in Figure 5.2, which shows the initial proposed measurement model for Survey 2, these constructs are training methods (TM), training environment (TE), trainer performance and behaviour (TPB), reaction (R), learning (L) and intention to transfer learning (ITL).

In this study, the initial (CFA) for Survey 3 (2–3 months after completion of the training) was conducted on the measurement model with 4 constructs and 18 items. As indicated in Figure 5.3, which shows the initial proposed measurement model for Survey 3, these constructs are training content (TC), training objectives (TO), behaviour (B) and results (Rs).

The measurement model was assessed using the maximum likelihood (ML) estimation technique provided by AMOS v.21. According to Kline, (2005) the maximum likelihood (ML) represents the statistical principle that underlies the derivation of parameter estimates: the estimates are the ones that maximize the likelihood that the data were drawn from population parameter. Table 5.11 presents the results of the initial CFA for the three-survey sample. First, the results of the initial CFA for Survey 1 indicate that the chi square (X^2) = 582.350, degree of freedom (df) = 220) were significant at $p < 0.05$

but that the fit of data to the model was not good and should be rejected. Second, although the results of the initial CFA for Survey 2 showed that the chi square (X^2) = 1398.810, degree of freedom (df) = 725 were significant at $p < 0.05$, the fit of data to the model was not good and should be rejected. Third, the results of the initial CFA for Survey 3 indicated that the chi square (X^2) = 525.715, degree of freedom (df) = 129, were significant at $p < 0.05$ but that the fit of data to the model was not good and should be rejected. However, depending on a sole indicator, such as the chi-square statistics, is not adequate for assessing the specification of a model because this measure is sensitive to sample size and very sensitive to violations of the assumption of normality. According to Kline (2005), the absolute fit indices, such as chi square (X^2) and goodness of fit index (GFI), are sample-based. Hence, other fit indices, such as the goodness of fit index(GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), root mean square error of approximation (RMSEA), parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI), were performed to assess the specification of the models for the three survey questionnaires in this study. A structural model should at least use three to four tests of model fit indices (Hair et al., 2014).

The results of the initial CFA for Survey 1 reveal that the value of chi square (X^2)= 582.350, p = < 0.05, chi square with degree of freedom (X^2/df)= 2.647, goodness of fit index (GFI) = 0.887, root mean square error of approximation (RMSEA) = 0.064, normed fit index (NFI) = 0.873, comparative fit index (CFI) = 0.916, adjusted goodness of fit index (AGFI) = 0.859, parsimony normed fit index (PNFI) = 0.707 and parsimony goodness of fit index (PGFI) = 0.759, and these are summarised in Table 5.11. As shown in Table 5.11, the initial figures illustrate that chi square with degree of freedom (X^2/df) has achieved an acceptable fit of 2.647 and is within the requirement of (<5)(as recommended by Kline, 2005; Shadfar and Malekmohammadi, 2013; Schumacker and Lomax, 2004), while mean square error of approximation (RMSEA) was also within the recommend values. In addition, some of the goodness of fit indices (e.g. goodness of fit index (GFI), normed fit index (NFI), comparative fit index(CFI) and adjusted goodness of fit index (AGFI) are very close to the recommended levels. Furthermore, parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) are above the recommended criteria. Hence, the results generated from the initial CFA of Survey 1 data revealed that further modification of the model was required because some of the goodness of fit indices were not consistent with the suggested values of the fit indices for the a priori specified measurement model. According to Anderson and Gerbing (1988), if the model fit indices are below the minimum recommended criteria, then there is a need for further refinement of the model. Kline (2005) argued that more model refinement procedures are required to refine and re-specify the model to improve the discriminant validity and achieve a better fit for the model. In this study, the model refinement procedures were applied based on the criteria recommended by researchers. According to Anderson and Gerbing (1988), the refinement of the model can be conducted by relating the indicators to a different factor or by dropping them and by relating the indicator to multiple factors or using correlated measurement errors. Moreover, checking the standardised residuals, modification indices and specification searches can help to improve the goodness of model fit (Hair et al., 2010). The factor loading should be greater than 0.5 and the squared multiple correlations (SMC) should be greater than the cut-off point of 0.5 (Byrne, 2001; Churchill, 1979). According to Hair et al. (2006), the standard residuals values should be less than ±2.5. Modification indices (MI) that indicate high covariance and demonstrate high regression weights are candidates to be dropped (Byrne, 2001; Hair et al., 2006).

Results for the initial CFA for Survey 2 indicate that the value of chi square (X^2) = 1398.810, $p< 0.05$, chi square with degree of freedom (X^2/df) = 2.010, goodness of fit index (GFI) = 0.847, root mean square error of approximation (RMSEA) = 0.050, normed fit index (NFI) = 0.731, comparative fit index (CFI) = 0.842, adjusted goodness of fit index (AGFI) = 0.827, parsimony normed fit index (PNFI) = 0.681 and parsimony goodness of fit index (PGFI) = 0.750, and these are presented in Table 5.11. As depicted in Table 5.11, the initial figures reveal that chi square with degree of freedom (X^2/df) has achieved an acceptable fit of 2.010 and is within the requirement (< 5). Although root mean square error of approximation (RMSEA) was within the recommended values, goodness of fit index (GFI), normed fit index (NFI), comparative fit index (CFI) and adjusted goodness of fit index (AGFI) were not within the suggested values. In contrast, parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) are above the recommend criteria. Hence, the results from the initial CFA for Survey 2 shows that further refinement of the model was required because some of the goodness of fit indices were not consistent with the recommended values of the fit indices for the a priori specified measurement model.

The results for the initial CFA of Survey 3 show that the value of chi square (X^2) =525.715, $p< 0.05$, chi square with degree of freedom (X^2/df) = 4.075, goodness of fit index (GFI) = 0.860, root mean square error of approximation (RMSEA) = 0.089, normed fit index (NFI) = 0.813, comparative fit index (CFI) = 0.851, adjusted goodness of fit index (AGFI) = 0.815, parsimony normed fit index (PNFI) = 0.685 and parsimony goodness of fit index(PGFI) = 0.649, and these are presented in Table 5.11. As indicated in Table 5.11, the initial figures show that chi square with degree of freedom (X^2/df) has achieved an acceptable fit of 4.075 and is within the requirement (< 5), but goodness of fit index (GFI), normed fit index (NFI), comparative fit index (CFI), adjusted goodness of fit index (AGFI) and root mean square error of approximation (RMSEA) were not within the recommended values. In contrast, parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) were above the recommend criteria. Hence, the results that were generated from the initial CFA for

Survey 3 show that further refinement of the model was required because some of the goodness of fit indices had inadequate values for the a priori specified measurement model.

Overall, the figures yielded from the initial CFA for the three surveys, as shown in Table 5.11, reveal that further refinement is required for the model because some model fit indices were not consistent with the suggested values of the fit indices for the a priori specified measurement model.

Table 5.11 Summary results for the initial CFA of three survey questionnaires

Survey 1, Summary results for the initial CFA

Measure	$\chi2$ =	*P*	Df	X^2/df	GFI	RMSEA	NFI	CFI	AGFI	PNFI	PGFI
Criteria		<.05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	582.350	0.000	220	2.647	0.887	0.064	0.873	0.916	0.859	.707	0.759

Note: **$\chi2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = Normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; **PNFI** = parsimony normed fit index; **PGFI** = parsimony goodness of fit index.

Survey 2, Summary results for the initial CFA

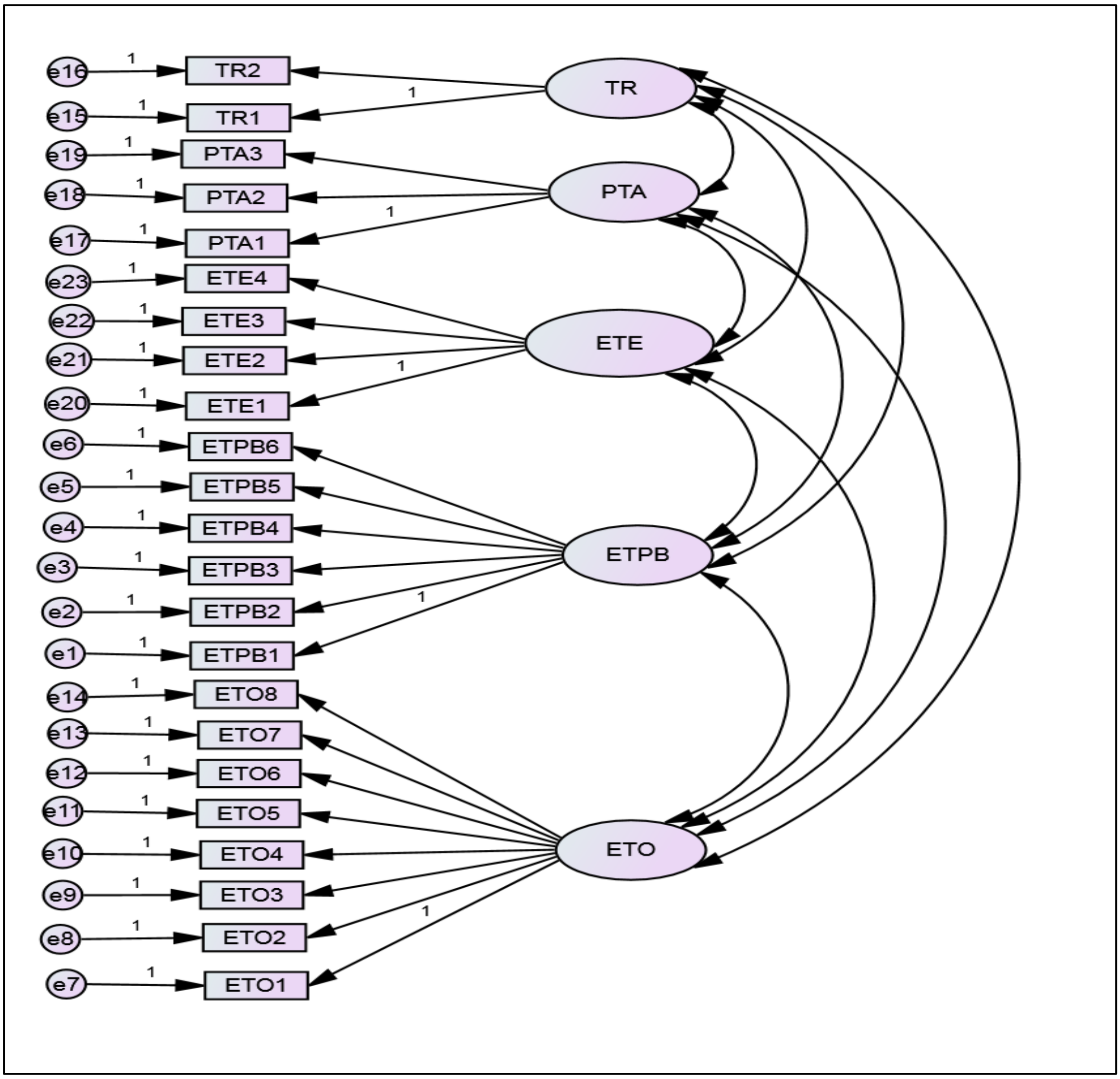
Measure	$\chi2$ =	*P*	Df	X^2/df	GFI	RMSEA	NFI	CFI	AGFI	PNFI	PGFI
Criteria		<.05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>0.50	>0.40
Hypothesized Model	1398.810	0.000	726	2.010	0.847	0.050	0.731	0.842	0.827	0.681	0.743

Note: **$\chi2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = Normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; **PNFI** = parsimony normed fit index; **PGFI** = parsimony goodness of fit index.

Survey 3, Summary results for the initial CFA

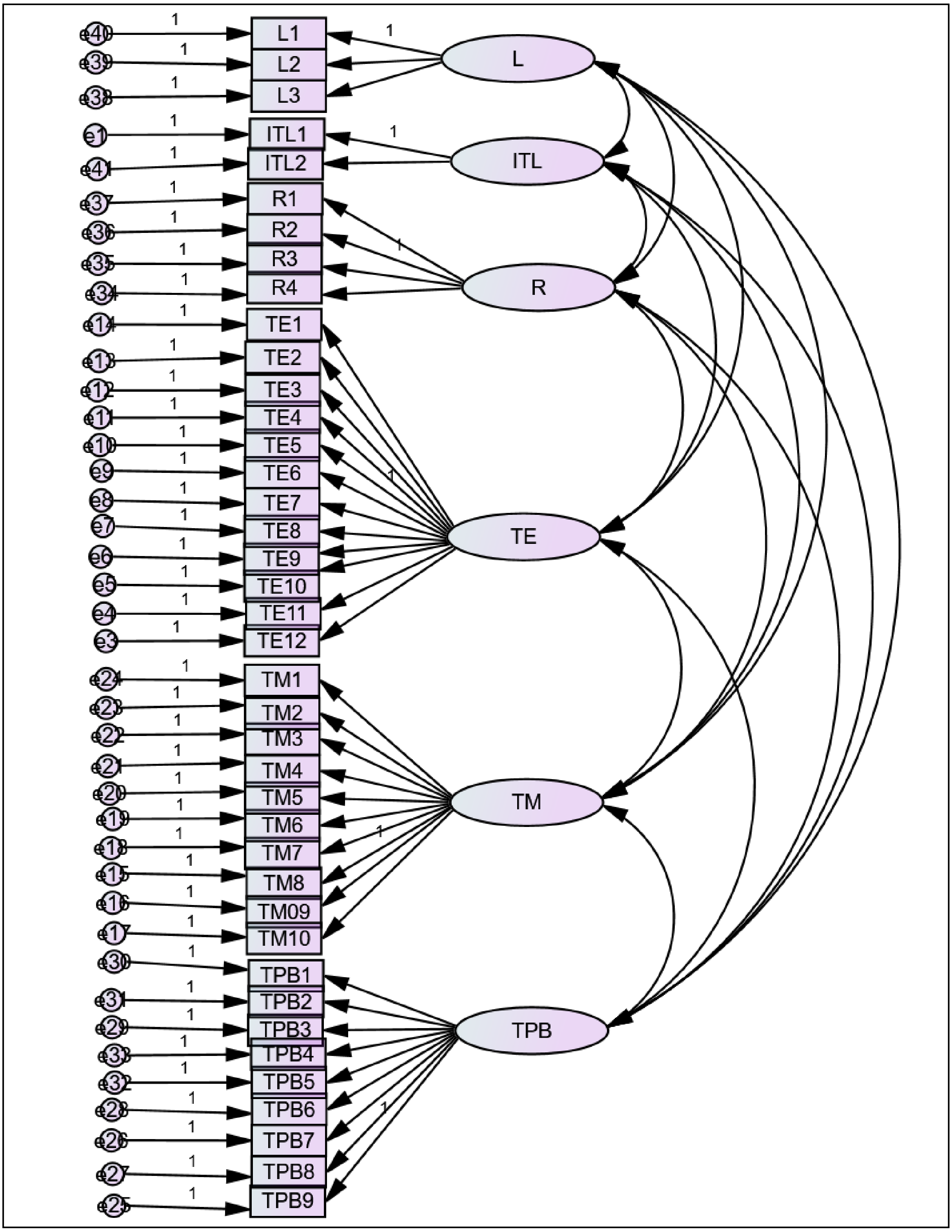
Measure	$\chi2$ =	*P*	Df	X^2/df	GFI	RMSEA	NFI	CFI	AGFI	PNFI	PGFI
Criteria		<.05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>0.50	>0.40
Hypothesized Model	525.715	0.000	129	4.075	0.860	0.089	0.813	0.851	0.815	0.685	0.649

Note: **$\chi2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = Normed fit index;**CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; **PNFI** = parsimony normed fit index; **PGFI** = parsimony goodness of fit index.



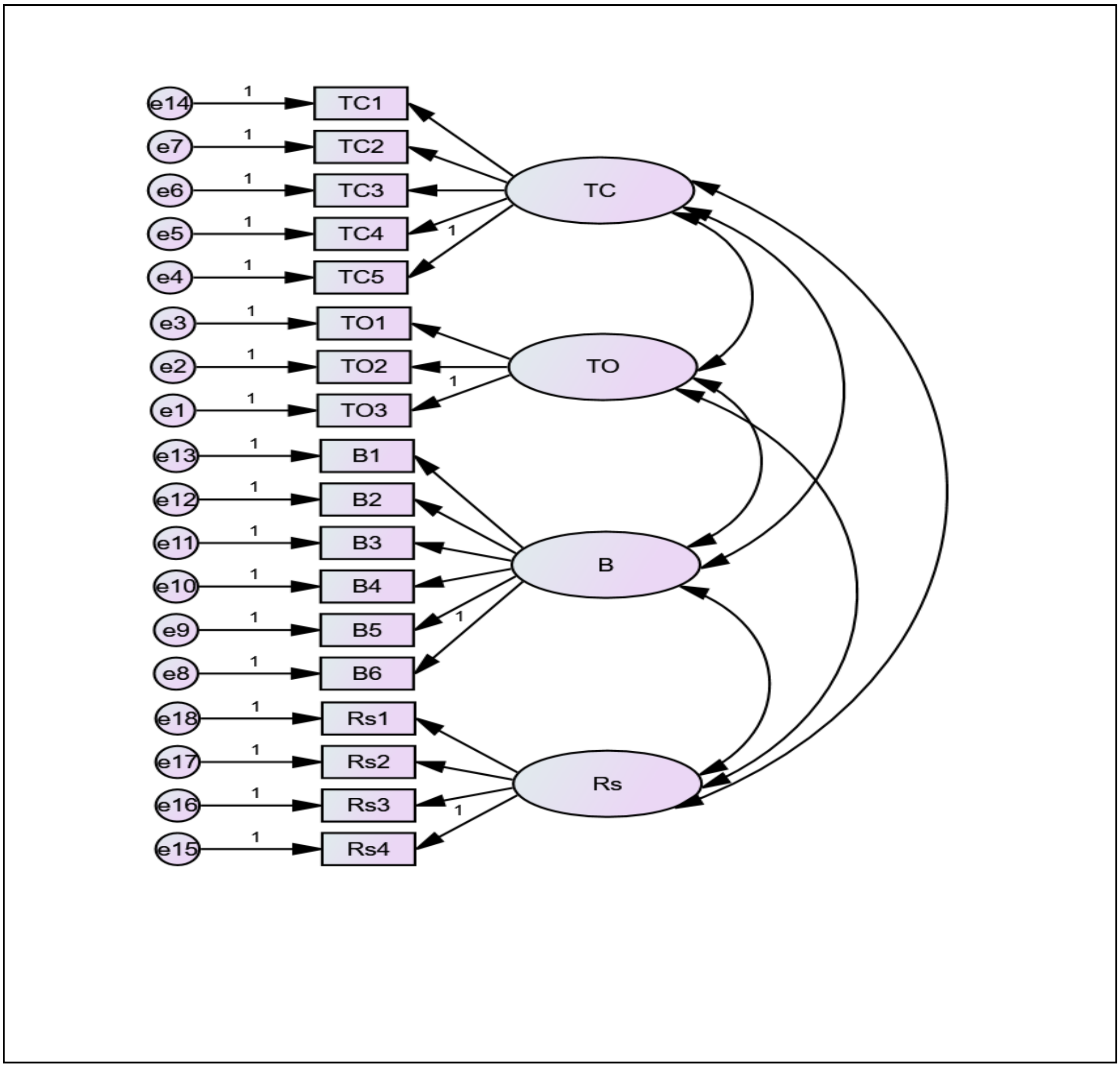
Note: PTA= Pre-training intervention and activities, **TR =** Trainee readiness, **ETO =** Expectations for training outcomes, **ETE =** Expectations of the training environment, **ETPB =** Expectations of trainer performance and behaviour.

Figure 5.1 The initial CFA model of survey 1 sample



Note : TM = Training methods, **TE=** Training environment, **TPB =** Trainer performance and behaviour, **R** =Reaction, **L** = Learning, **ITL** = Intention to transfer learning.

Figure 5.2 The initial CFA model of survey 2 sample



Note : **TC** = Training content, **TO** = Training objectives, **B** = Behaviour, **Rs =** Results.

Figure 5.3 The initial CFA model of survey 3 sample

The output of the initial CFA for Survey 1 was examined to determine if any item was proving to be problematic. The evaluation of results showed that the standard regression weight of some measurement items was less than 0.5 (Churchill, 1979; Byrne, 2001; Holmes-Smith et al., 2006). The factor loading values of ETO1 and ETO2 were not within the acceptable level (0.5), and the evaluation of standardised residuals revealed that they were not within the threshold (above 2.58 or below -2.58) (Byrne, 2001; Hair et al., 2014). The items which shared a high degree of residual variance were therefore deleted (Byrne, 2001; Hair et al., 2014). Hence, these problematic items from the initial CFA were dropped to get a model with a better fit for Survey 1. Then, the measurement model was re-run to show a final CFA model (Byrne, 1998; Kline, 2005; Hair et al., 2014). The final CFA model is shown in Figure 5.4.

After dropping ETO1 and ETO2 from the initial CFA model for Survey 1, the CFA was re-run to examine the measurement model fit. Then, the highest values in Modification indices (MI) were checked to see if a relationship can be made between two items in the same constructs to modify the model fit; hence, a relationship was made between two items, ETO6 and ETO7, as well as between PTA1 and PTA2, as depicted in Figure 5.4. The results of the model revealed improvements in the model fit, as depicted in Figure 5.4.

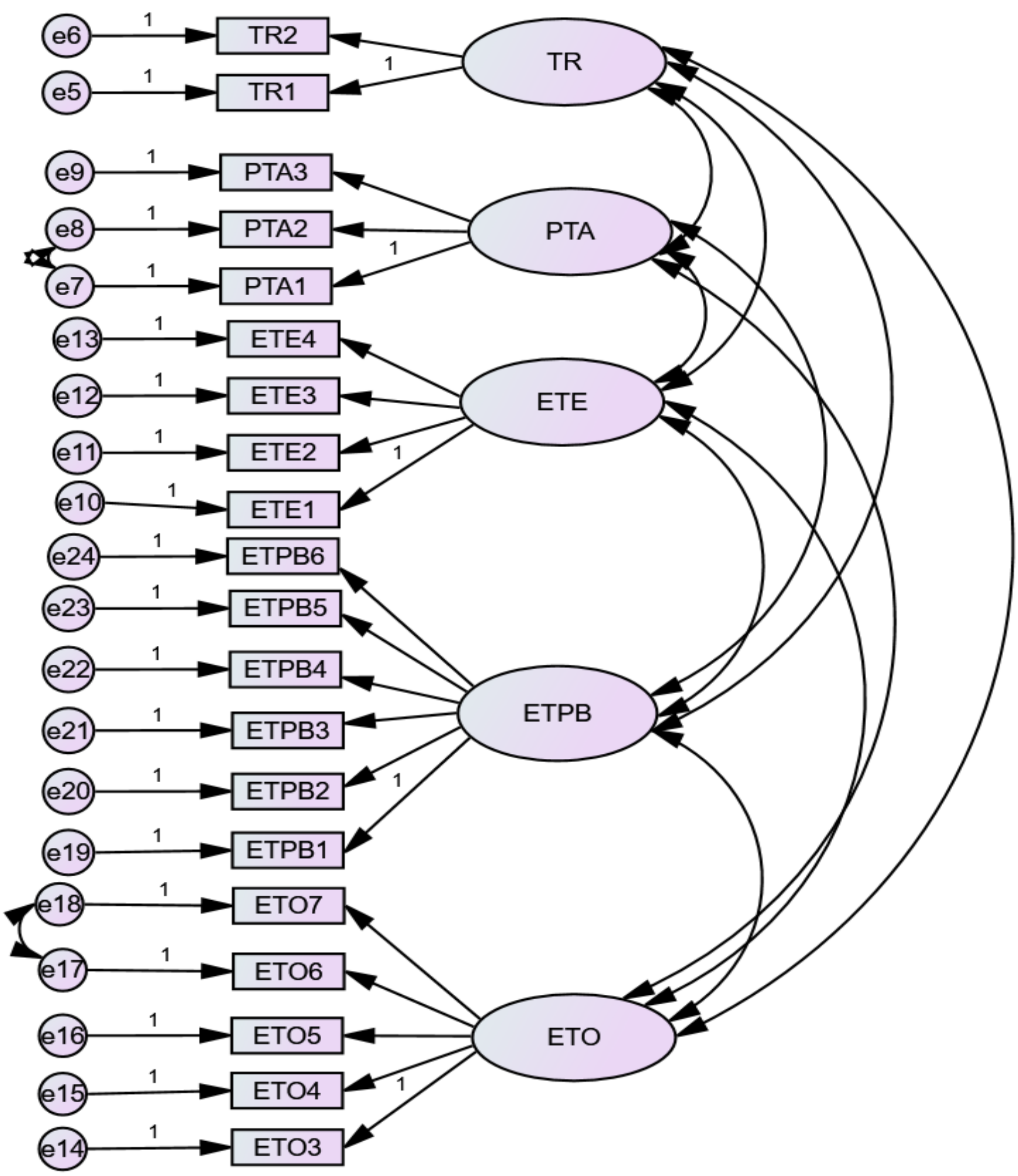
Furthermore, the output of the initial CFA for Survey 2 was evaluated to determine whether any item was proving to be problematic. The assessment of the results revealed that the standard regression weight of some measurement items was less than 0.5 (Churchill, 1979; Byrne, 2001; Holmes-Smith et al., 2006). The factor loading values of TE3, TE5, TE8, TE9, TE10, TE11, TM1, TM2, TM3, TM4, TM5, TPB1, TPB3, TPB5, TPB8 and R1 were not within the acceptable level (0.5), and the evaluation of standardised residuals revealed that they were not within the threshold (above 2.58 or below -2.58) (Byrne, 2001; Hair et al., 2014).

After dropping TE3, TE5, TE8, TE9, TE10, TE11, TM1, TM2, TM3, TM4, TM5, TPB1, TPB3, TPB5, TPB8 and R1 from the initial confirmatory factor analysis (CFA) model for Survey 2, another test was run, as shown in Figure 5.5. The results of the model showed improvements in the model fit, as depicted in Figure 5.5. The results of the final CFA are satisfactory, as presented in Table 5.12.

The output of the initial CFA for Survey 3 was examined to determine whether any item was proving to be problematic. The evaluation of the results showed that the standard regression weight of some measurement items was less than 0.5 (Churchill, 1979; Byrne, 2001; Holmes-Smith et al., 2006). The factor loading values of B6 were not within the acceptable level (0.5), and the evaluation of the standardised residuals revealed that they were not within the threshold (above 2.58 or below -2.58) (Byrne, 2001; Hair et al., 2014). The items which shared a high degree of residual variance were therefore deleted (Byrne, 2001; Hair et al., 2014). Hence, the problematic item in the initial CFA was dropped to get a model with a better fit for Survey 3. Then, the measurement model was re-run to show the final (CFA) model (Byrne, 1998; Kline, 2005; Hair et al., 2014). The final CFA model for Survey 3 is shown in Figure 5.6.

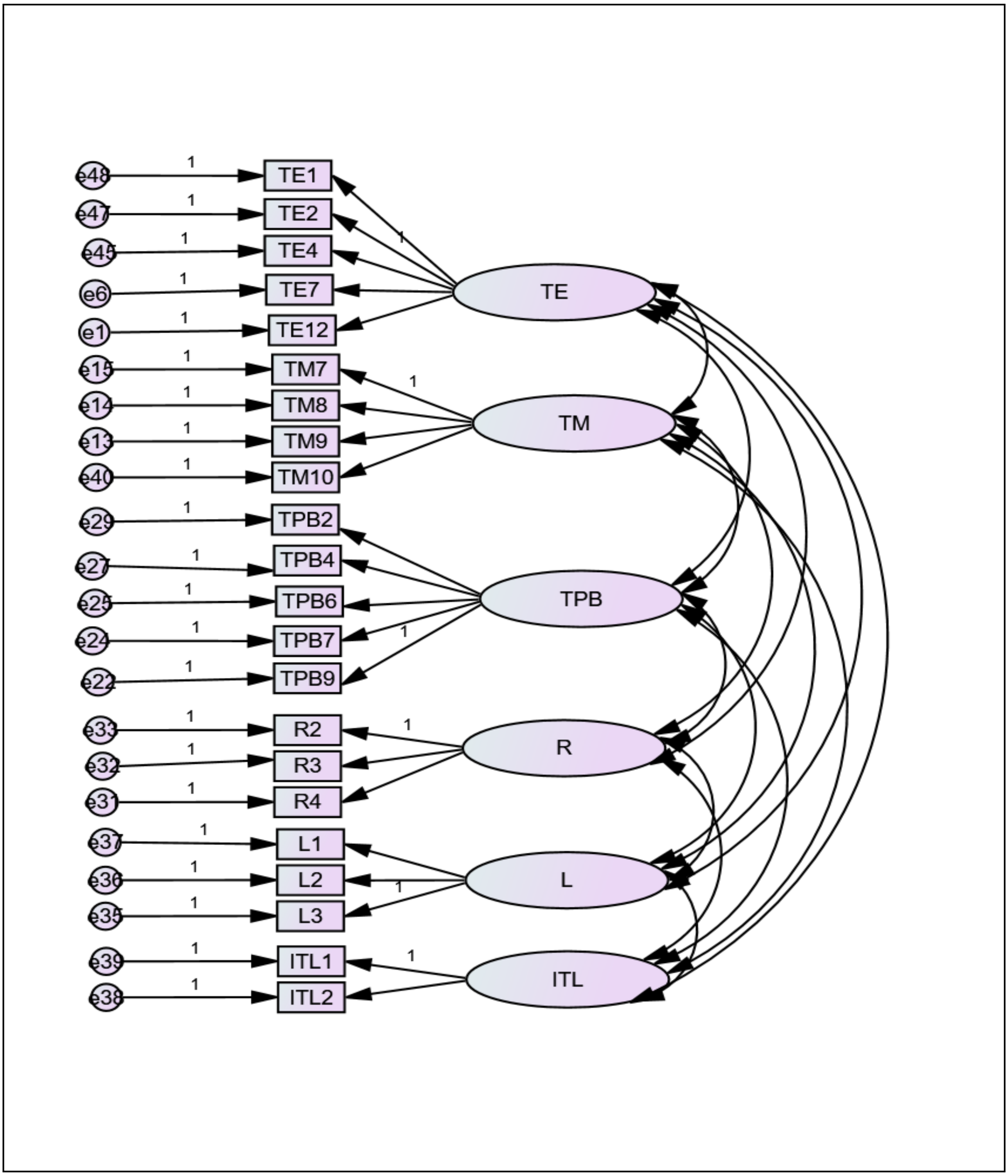
After dropping B6 from the initial CFA model for Survey 3, the CFA was re-run to examine the measurement model fit. Then, the highest values in Modification indices (MI) were checked to see if a relationship could be made between two items in the same constructs to modify the model fit; hence, relationships were made between two items: TC2 and TC4, TO1 and TO2, B3 and B5 and Rs1 and

Rs2 (as depicted in Figure 5.6). The results of the model revealed improvements in the model fit, as shown in Figure 5.6.



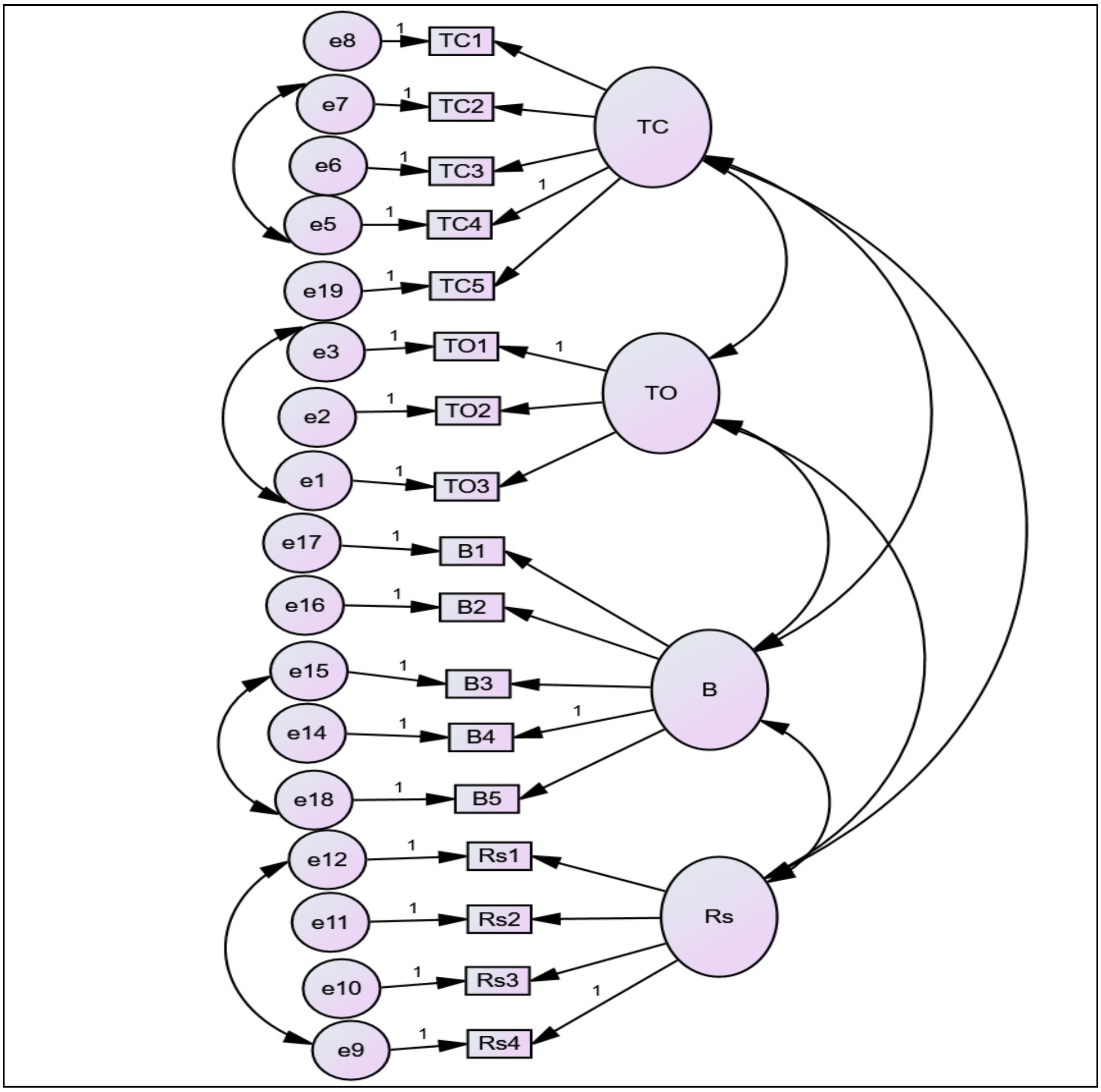
Note: PTA = Pre-training intervention and activities, **TR =** Trainee readiness, **ETO =** Expectations for training outcomes, **ETE =** Expectations of the training environment, **ETPB =** Expectations of trainer performance and behaviour.

Figure 5.4 The final CFA model of survey 1 sample



Note: TM = Training methods, **TE =** Training environment, **TPB** = Trainer performance and behaviour, **R =** Reaction, **L=** Learning, **ITL =** Intention to transfer learning.

Figure 5.5 The final CFA model of survey 2 sample



Note: Training content (**TC**), Training objectives (**TO**), Behaviour (**B**), Results (**Rs**).

Figure 5.6 The final CFA model of survey 3 sample

The results of the respective measurement models for the three-survey sample following the removal of redundant items are summarised in Table 5.12. The results of the improved model for Survey 1 yielded values for the chi square (X^2) = 354.888, degrees of freedom (df) = 158, chi square with degrees of freedom (χ^2/df = 2.246), goodness of fit index (GFI) = 0.921, adjusted goodness of fit index (AGFI) = 0.895, normed fit index (NFI) = 0. 913, comparative fit index (CFI) = 0.949, parsimony normed fit index (PNFI) = 0.759, parsimony goodness of fit index (PGFI) = 0.693 and root mean square error of approximation (RMSEA) = 0.055. Although the chi square (X^2) remains significant and the adjusted goodness of fit index (AGFI) does not meet the acceptable threshold of 0.9, the other modification indices were improved and meet the minimum recommended values. The results for goodness of fit show that the model fits the data adequately well, which confirms that no further refinement was required for the model. Hence, the unidimensionality of the data was determined (Byrne 2001; Hair et al., 2006).

The results for the improved model for Survey 2, as shown in Table 5.12, yields values for chi square (X^2) = 425.900, degrees of freedom (df = 180), chi square with degrees of freedom (χ^2/df)= 2.366, goodness of fit index (GFI) = 0.929, adjusted goodness of fit index (AGFI) = 0.901, normed fit index (NFI) = 0.812, comparative fit index (CFI) = 0.879, parsimony normed fit index (PNFI) = 0.633, parsimony goodness of fit index (PGFI) = 0.661 and root mean square error of approximation (RMSEA) = 0.058. Although the chi square (X^2) remains significant and the normed fit index (NFI) and comparative fit index (CFI) do not meet the acceptable threshold of 0.9, the other modification indices were improved and meet the minimum recommended values. The results for goodness of fit indicate that the model fits the data adequately well, which confirms that no further refinement was required for the model. Hence, the unidimensionality of the data was determined.

The results for the improved model for Survey 3, as depicted in Table 5.12, yields values for the chi square (X^2) = 316.218, degrees of freedom (df) = 102, chi square with degrees of freedom (χ^2/df) = 3.100, goodness of fit index (GFI) = 0.916, adjusted goodness of fit index (AGFI) = 0.873, normed fit index (NFI) = 0.879, comparative fit index (CFI) = 0.914, parsimony normed fit index (PNFI) = 0.659, parsimony goodness of fit index (PGFI) = 0.610 and root mean square error of approximation (RMSEA) = 0.073. Although the chi square (X^2) remains significant and the adjusted goodness of fit index (AGFI) and normed fit index (NFI) do not meet the acceptable threshold of 0.9, the other modification indices were improved and meet the minimum recommended values. The results for the goodness of fit show that the model fits the data adequately well, which confirms that no further refinement was required for the model. Hence, the unidimensionality of the data was determined.

Table 5.12 Summary results for the final confirmatory factor analysis (CFA) model of three survey questionnaires

Survey 1, Summary results for the final confirmatory factor analysis CFA											
Measure	**$\chi 2$**	***P***	**Df**	**X^2/df**	**GFI**	**RMSEA**	**NFI**	**CFI**	**AGFI**	**PNFI**	**PGFI**
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	354.888	.000	158	2.246	.921	.055	.913	.949	.895	.759	.693
Note: **$\chi 2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; **PNFI** = parsimony normed fit index; **PGFI** = parsimony goodness of fit index.											
Survey 2, Summary results for the final confirmatory factor analysis CFA											

Measure	$\chi 2$	*P*	Df	X^2/df	GFI	RMSEA	NFI	CFI	AGFI	PNFI	PGFI
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	425.900	.000	180	2.366	0.929	0.058	0.812	0.879	0.901	0.633	0.661
Survey 3, Summary results for the final confirmatory factor analysis CFA model											
Measure	**$\chi 2$**	***P***	**Df**	**X^2/df**	**GFI**	**RMSEA**	**NFI**	**CFI**	**AGFI**	**PNFI**	**PGFI**
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	316.218	.000	102	3.100	0.916	0.073	0.879	0.914	0.873	0.659	0.610
Note: **$\chi 2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; PNFI = parsimony normed fit index; PGFI = parsimony goodness of fit index.											

5.10.2 Assessment of the validity of the constructs in the three survey questionnaires

One of the significant aims of CFA is to assess the validity of the construct of a proposed measurement theory; its ability to determine the accuracy of measurement (Hair et al., 2014). Construct validity can be examined by assessing three components: convergent validity, discriminant validity and nomological validity (Hair et al., 2014). This study assessed convergent validity and discriminant validity. Normalized validity was not assessed because convergent validity and discriminant validity are the most widely accepted form of validity. This section presents the convergent validity and discriminant validity of the three survey questionnaires.

Convergent validity

The convergent validity is evaluated by assessing factor loading, average variance extracted (AVE) and composite reliability (Hair et al., 2010). In this study, a minimum cut-off point for factor loading of not less than 0.5, an AVE that starts at a value of 0.5 and a composite reliability > 0.6 were used to assess the convergent validity. The results for the convergent validity of the constructs of the three survey questionnaires are presented in Table 5.13.

The acceptance value for standardised loading in CFA is 0.5 (Byrne, 2001; Hair et al., 2014), and a reliability of 0.7 or more is considered good (Hair et al., 2014). Table 5.13 shows the results for the loading factors of the constructs for the three survey questionnaires.

The AVE is computed by the mean variance extracted from the factor loading using Equation 1 below (Fornell and Larcker, 1981; Hair et al., 2014). The results of average variance extracted AVE for the constructs of the three survey questionnaires are depicted in Table 5.13.

$$\text{AVE} = \frac{\sum_{i=1}^{n} \lambda_i^2}{n} \qquad (1)$$

Where AVE = average variance extract, **λ** = the standardized factor loading and i: the number of items.

Composite reliability or construct reliability (CR) measures internal consistency (Bagozzi and Yi, 1988). It is calculated using the squared sum of the factor loadings per construct yield from the structure equation model and the sum of the error variance terms for the constructs, as in Formula 2 below (Hair et al., 2014).

$$CR = \frac{\left(\sum_{i=1}^{n} \lambda_i\right)^2}{\left(\sum_{i=1}^{n} \lambda_i\right)^2 + \left(\sum_{i=1}^{n} e_i\right)^2} \qquad (2)$$

Where **λ**: the standardised factor loading, *i*: the number of items, and e: error variance.

Table 5.13 Convergent validity of the three survey questionnaires

Survey questionnaire 1, convergent validity				
Construct	**Item**	**Standardized Factor loading**	**Average variance extracted (AVE)**	**Composite reliability (CR)**
PTA	**PTA1**	0.821		
	PTA2	0.698		
	PTA3	0.773	0.586	0.809
TR	**TR1**	0.895		
	TR2	0.591	0.575	0.722
ETE	**ETE1**	0.815		
	ETE2	0.808		
	ETE3	0.775		
	ETE4	0.777	0.630	0.872
ETPB	**ETPB1**	0.646		
	ETPB2	0.764		
	ETPB3	0.765		
	ETPB4	0.805		
	ETPB5	0.727		
	ETPB6	0.805	0.556	0.882
	ETO3	0.736		
	ETO4	0.738		
	ETO5	0.814		
	ETO6	0.649		
ETO	**ETO7**	0.653	0.519	0.843
Survey questionnaire 2, convergent validity				
Construct	**Item**	**Standardized**	**Average**	**Composite**

		Factor loading	variance extracted (AVE)	reliability (CR)
TM	**TM7**	0.912		
	TM8	0.707		
	TM9	0.913		
	TM10	0.666	0.652	0.880
TE	**TE1**	0.811		
	TE2	0.946		
	TE4	0. 714		
	TE7	0.737		
	TE12	0.659	0.608	0.884
TPB	**TPB2**	0.695		
	TPB4	0.509		
	TPB6	0.760		
	TPB7	0.671		
	TPB9	0.976	0.545	0.851
R	**R2**	0.577		
	R3	0.757	0.513	0.756
	R4	0. 795		
L	**L1**	0.614		
	L2	0.596		0.758
	L3	0.912	0.521	
ITL	**ITL1**	0.812		
	ITL2	0.693	0.570	0.725

Survey questionnaire 3, convergent validity

Construct	Item	Standardized Factor loading	Average variance extracted (AVE)	Composite reliability (CR)
TC	**TC1**	0.821	0.513	0.839
	TC2	0.657		
	TC3	0.670		
	TC4	0.661		
	TC5	0.757		
TO	**TO1**	0.874		0.766
	TO2	0.581	0.529	
	TO3	0.696		
B	**B1**	0.722		
	B2	0.573	0.527	0.846
	B3	0.774		
	B4	0.697		
	B5	0.836		
Rs	**Rs1**	0.885	0.591	0.849
	Rs2	0.864		
	Rs3	0.731		
	Rs4	0.548		

Regression weight 1

Note: **PTA=** Pre-training intervention and activities, **TR** =Trainee readiness, **ETO =** Expectations for training outcomes, **ETE=** Expectations of the training environment, **ETPB =** Expectations of trainer performance and behaviour, **TM=** Training methods, **TE=** Training environment, **TPB=** Trainer performance and behaviour, **R=** Reaction, **L=** Learning, **ITL=** Intention to transfer learning, **TC =** Training content, **TO=** Training objectives, **B=** Behaviour, **Rs=** Results.

The results of the measurement model for Survey 1, as shown in Table 5.13, reveal that all the standardised factor loadings (standard regression weights) were above the minimum cut-off point (0.05), with the lowest value equalling 0.646. All the composite reliability were significant and above 0.6 ($p < 0.001$), and the average variance extracted (AVE) was more than 0.05. Hence, these figures demonstrated a high level of convergent validity for the latent constructs used in the model for Survey 1 in this study.

The results of the measurement model for Survey 2, as illustrated in Table 5.13, indicate that all the standardised factor loadings (standard regression weights) were above the minimum cut-off point (0.05), with the lowest value equalling 0.509. All the composite reliability were significant and above 1.96 ($p < 0.001$), and the average variance extracted (AVE) was more than 0.05. Hence, these results demonstrate a high level of convergent validity for the latent constructs used in the model for Survey 2 in this research.

The results of the measurement model for Survey 3, as shown in Table 5.13, reveal that all the standardised factor loadings (standard regression weights) were above the minimum cut-off point (0.05), with the lowest value equalling 0.548. All the critical ratios (t-values) were significant, and above 1.96 ($p < 0.001$), and the average variance extracted (AVE) was more than 0.05. Hence, these results demonstrate a high level of convergent validity for the latent constructs used in the model for Survey 3 in this research.

Discriminant validity

The discriminant validity can be assessed by comparing the average variance extracted (AVE) for each of the two constructs with the square of the correlation estimate between these two constructs (Hair et al., 2010). According to Fornell and Larcker (1981), discriminant validity will be demonstrated significantly if the average variance extracted AVE estimate is larger than the squared correlation estimate. Hence, Table 5.14 presents the discriminant validity of the three survey questionnaires.

Table 5.14 Discriminant validity of three survey questionnaires

Survey 1, discriminant validity						
Construct	**AVE**	**TR**	**ETO**	**ETE**	**PTA**	**ETPB**
TR	0.575	0.758				
ETO	0.519	0.137	0.721			
ETE	0.630	-0.057	0.294	0.794		
PTA	0.586	0.186	0.036	0.650	0.766	
ETPB	0.556	-0.194	0.424	0.680	0.226	0.746

Survey 2, discriminant validity							
Construct	**AVE**	**TE**	**TM**	**TPB**	**R**	**L**	**ITL**
TE	0.608	0.780					
TM	0.652	0.608	0.808				
TPB	0.545	0.201	0.165	0.738			
R	0.570	-0.042	-0.045	0.046	0.755		
L	0.521	0.248	0.210	0.199	0.005	0.722	
ITL	0.513	0.183	0.233	0.153	0.087	0.228	0.716
Survey 3, discriminant validity							

Construct	AVE	Rs	TC	B	TO
Rs	0.591	0.769			
TC	0.513	0.061	0.716		
B	0.527	0.133	0.153	0.726	
TO	0.529	0.111	-0.037	0.163	0.727

Note: **PTA=** Pre-training intervention and activities, **TR** =Trainee readiness, **ETO =** Expectations for training outcomes, **ETE=** Expectations for the training environment, **ETPB =** Expectations of trainer's performance and behaviour, **TM=** Training methods, **TE=** Training environment, **TPB=** Trainer performance and behaviour, **R=** Reaction, **L=** Learning, **ITL=** Intention to transfer learning, **TC =** Training content, **TO=** Training objectives, **B=** Behaviour, **Rs=** Results.

5.12 Structural model evaluation and hypothesis testing

Specifying the structural model is a significant step in structural equation modelling (SEM), as it converts the measurement model to a structural model and assigns relationships from one construct to another based on the proposed theoretical model (Hair et al., 2014). This model identifies the relationship between exogenous constructs (independent variables) and endogenous constructs (dependent variables or outcomes). The structural model for Survey 1 is specified by one correlation relationship between the two exogenous constructs (pre-training intervention and activities, and trainee readiness) and the structural relationships depicted by 6 path estimates that link the relationships between the exogenous constructs and the endogenous constructs (pre-training intervention and activities, and trainee readiness with the expectation of the training environment, the expectation of trainer performance and behaviour, and the expectations for training outcomes). In order to evaluate the hypothesized structural model, goodness of fit indices and other parameter estimates were used.

Table 5.15 illustrates the results from running SEM on the three survey questionnaires and shows an adequate level of fit. The results for the final structural model for Survey 1 show that the chi square (X^2) = 354.888, degrees of freedom (df = 158), significance level ($p < 0.005$) indicate an acceptable chi square with degrees of freedom (χ^2/df) = 2.246 less than 5 (as recommended by Kline, 2005; Shadfar and Malekmohammadi, 2013; Schumacker and Lomax, 2004). The other goodness of fit measurements are within the recommend values associated with a good fit: goodness of fit index (GFI) = 0.921, adjusted goodness of fit index (AGFI) = 0. 895, normed fit index (NFI) = 0.913 and comparative fit index (CFI) = 0.949. The parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) are acceptable at 0.759 and 0.693, respectively, and the root mean square error of approximation (RMSEA) = 0.055. There is no difference between the structural model and the measurement model; hence, the model is acceptable. Based on this, the specified structural model can now be used for hypothesis testing.

The results for the final structural model for Survey 2 show the chi square (X^2) = 274.892, degrees of freedom (df) = 196, significance level ($p < 0.005$) and chi square with degrees of freedom (χ^2/df) = 1.403 less than 5. The other goodness of fit measurements are within the recommended values associated with a good fit: goodness of fit index (GFI) = 0.943, adjusted goodness of fit index (AGFI) = 0.926, normed fit index (NFI) = 0.879 and comparative fit index(CFI) = 0.961. The parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) are at 0.745 and 0.730, respectively, which is acceptable, and the root mean square error of approximation (RMSEA) = 0.032, which meets the minimum recommended value. In spite of a slight difference between the structural model and the measurement model for Survey 2, the specified structural model for Survey 2 is acceptable and can now be used for hypothesis testing.

The results for the final structural model for Survey 3 shows the chi square (X^2) = 249.230, degrees of freedom (df = 102), significance level ($p < 0.005$) and chi square with degrees of freedom (χ^2/df) = 3.100 less than 5. The other goodness of fit measurements are within the recommend values associated with a good fit: goodness of fit index (GFI) = 0.916, adjusted goodness of fit index (AGFI) = 0.873, normed fit index (NFI) = 0.879 and comparative fit index (CFI) = 0.914. The parsimony normed fit index (PNFI) and parsimony goodness of fit index (PGFI) are acceptable at 0.659 and 0.610, respectively, and root mean square error of approximation (RMSEA) = 0.073, which meets the minimum recommended criteria. In spite of a slight difference between the structural model and the measurement model for Survey 3, the specified structural model for Survey 3 is acceptable and can now be used for hypothesis testing.

Table 5.15 Summary results for the final structural model of the three survey questionnaires

Survey 1,summary results for the final structural model

Measure	**$\chi 2$**	***P***	**Df**	**X^2/df**	**GFI**	**RMSEA**	**NFI**	**CFI**	**AGFI**	**PNFI**	**PGFI**
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	354.888	.000	158	2.246	.921	.055	0.913	.949	.895	.759	.693

Note: **$\chi 2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; PNFI = parsimony normed fit index; PGFI = parsimony goodness of fit index.

Survey 2,summary results for the final structural

Measure	**$\chi 2$**	***P***	**Df**	**X^2/df**	**GFI**	**RMSEA**	**NFI**	**CFI**	**AGFI**	**PNFI**	**PGFI**
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	274.892	.000	196	1.403	0.943	0.032	0.879	0.961	0.926	0.745	0.730

Note: **$\chi 2$** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = normed fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; PNFI = parsimony normed fit index; PGFI = parsimony goodness of fit index.

Survey 3,summary results for the final structural											
Measure	$\chi 2$	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**NFI**	**CFI**	**AGFI**	**PNFI**	**PGFI**
Criteria		< .05		<5	≥ 0.9	≤ .08	≥ 0.9	≥ 0.9	≥ 0.9	>.50	>0.40
Hypothesized Model	316.218	.000	102	3.100	0.916	.073	0.879	0.914	0.873	0.659	0.610

Note: $\chi 2$ = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **NFI** = Normad fit index; **CFI** = Comparative fit index; **AGFI** – Adjusted goodness of fit index; **PNFI** = parsimony normed fit index; **PGFI** = parsimony goodness of fit index.

5.12.1 Hypothesis testing

This section shows the results of the hypothesis testing for the three survey questionnaires, as shown in Table 5.16. Goodness of fit indices and other parameter estimates were tested to assess the proposed theoretical structural models for the three survey questionnaires. The hypothesis is supported if the critical ratio (CR or t-value) is above 1.96 for an estimate (regression weight) at a significance level lower than the 0.05 of the parameter coefficient value (Hair et al., 2010). The details of the results for the hypothesis testing of the three survey questionnaires is provided below.

Table 5.16 Results of hypothesis testing of three survey questionnaires

Survey 1, results of hypothesis testing						
Constructs	**Hypotheses**	**Standardised Path Estimate (β)**	**Critical Value (CR)/t**	**Standard error(S.E)**	**Significance of value (P)**	**Support**
Pre-training intervention and activities (**PTA**)	H1a: PTA → ETO	-.128	-2.198	.058	*.028	No
	H1b: PTA → ETE	.536	10.400	.052	***.001	Yes
	H1c: PTA → ETPB	.166	4.379	.038	*** .001	Yes
Trainee readiness (**TR**)	H2a: TR → ETO	.176	3.435	.051	*** .001	Yes
	H2b: TR → ETE	-.163	-3.065	.053	**.002	No
	H2c: TR → ETPB	-.169	-3.344	.051	***.001	No
Survey2, results of hypothesis testing						
Constructs	**Hypotheses**	**Standardised Path Estimate (β)**	**Critical Value (CR)/t**	**Standard error(S.E)**	**Significance of value (P)**	**Support**
Reaction (**R**)	H3: R → L	0.165	2.643	0.118	0.008**	Yes
Learning (**L**)	H4:L → ITL	0.010	0.146	0.062	0.884	No
Training environment (**TE**)	H5a: TE → R	0.032	0.488	0.060	0.625*	No
	H5b: TE → L	0.148	2.391	0.107	0.017*	Yes
	H5c:TE → ITL	-0.025	-0.360	0.114	0.719*	No

Training methods (**TM**)	H6a:TM → R	0.068	0.068	1.029	0.303*	No
	H6b:TM → L	0.002	0.040	0.121	0.968*	No
	H6c:TM → ITL	0.025	0.376	0.128	0.707*	No
Trainer performance and behaviour (**TPB**)	H7a:TPB → R	0.137	1.995	0.060	0.046*	Yes
	H7b:TPB → L	0.129	2.026	0.107	0.043*	Yes
	H7c:TPB → ITL	0.041	0.112	0.587	0.557*	No

Survey3, results of hypothesis testing

Constructs	**Hypotheses**	**Standardised Path Estimate (β)**	**Critical Value (CR)/t**	**Standard error(S.E)**	**Significance of value (P)**	**Support**
Behaviour (**B**)	H8:B → Rs	0.110	2.117	.035	0.034*	Yes
Training content (**TC**)	H9a:TC → B	0.159	2.730	.067	.006**	Yes
	H9b:TC → Rs	0.048	.869	.043	.385*	No
Training objectives (**TO**)	H10a:TO → B	0.169	2.908	.038	.004**	Yes
	H10b: TO → Rs	0.095	1.765	.024	.078*	No

Note: * Significant at 0.001 levels (two tailed)**
**** Significant at 0.01 levels (two tailed)**
*** Significance at .05 levels (two tailed)**
(β)= Estimate = regression weight; S.E = standard error; C.R = critical ratio

5.12.1.1 Hypothesis testing for Survey 1

Table 5.16 reveals the results of hypothesis testing for survey 1; six hypotheses represented the relationships between the latent constructs. Assessment of parameter estimate results shows that three out of the six hypothesises are supported. The t-values for the remaining three constructs were found not to be significant (t value= -2.198, p = 0.028, t value= -3.065, p = 0.002, t value= -3.344, p = 0.001). The results for the hypothesized model of Survey 1 after hypothesis testing are depicted in Figure 5.6.

H1a, H1b and H1c: pre-training interventions and activities have a significant positive relationship with expectations for training outcomes, expectations of the training environment and expectations of trainer's performance and behaviour.

The results reveal the significance of the path estimate (-0.128, t-value = -2.198 and $p < 0.05$) between pre-training interventions and activities, and the expectations for training outcomes. Hence, hypothesis (H1a) is supported, as there is a negative, direct impact from pre-training interventions and activities on expectations for training outcomes. If the pre-training interventions and activities increase, expectations for training outcomes would decrease. H1a is rejected.

The results indicate the significance of the path estimate (0.537, t-value = 10.382 and p = 0.001) between pre-training interventions and activities and expectations of the training environment. Therefore, hypothesis (H1b) is supported, as there is a positive, direct impact from pre-training interventions and activities on expectations of training environment.

The results demonstrate support for the first hypothesis (H1c) for a direct relationship between the pre-training interventions and activities, and trainees' expectations of the trainer's performance and behaviour. The pre-training interventions and activities have a direct, significant and positive impact on expectations of the trainer's performance and behaviour with a path estimate of 0.167, a t-value of 4.386 and a significance level of p = 0.001.

H2a, H2b and H2c: trainee readiness has a significant positive relationship with expectations for training outcomes, with expectations of trainer performance and behaviour, and with expectations of the training environment.

According to the results, trainee readiness has a significant positive impact on expectations of trainer performance and behaviour (0.175, t-value = 3.424 and p = 0.001); therefore, hypothesis (H2a), which explains the impact of trainee readiness on expectations of trainer performance and behaviour is supported.

The results reveal that there is no significant direct impact from trainee readiness on the expectations of the training environment (-0.163, t-value = -3.065 and p = 0.002). Hence, hypothesis (H2b) is rejected.

The results indicate the significance of the relationship between trainee readiness on the expectations of trainer's performance and behaviour (p = 0.001), but the sign of the estimated value reflects a negative relationship (-0.169, t-value = -3.344). Although the relationship between trainee readiness and expectations of trainer performance and behaviour is significant, it was in a negative direction. Hence, hypothesis (H2c) is rejected.

5.12.1.2 Hypothesis testing for Survey 2

Table 5.16 shows the results of the hypothesis testing for Survey 2; 11 hypotheses represented the relationships between the latent constructs. The assessments of the parameter estimate results indicate that 7 of the 11 hypotheses are not supported. The t-values for the remaining seven relationships between constructs were found not to be statistically significant: (t-value = 0.146, p = 0.884; t-value = 0.488, p = 0.625; t-value = -0.360, p = 0.719; t-value = 0.068, p = 0.303; t-value = 0.968, p = 0.040; t-value = 0.376, p = 0.707; t-value = 0.112, p = 0.557). The results for the hypothesized model of the Survey 1 after hypotheses testing are depicted in Figure 5.7.

H3: Reaction has a significant positive relationship with learning

The results reveal the significance of the direct impact of reaction on learning (0.165, t-value = 2.643 and p = 0.008). Hence, hypothesis (H3) is supported.

H4: Learning has a significant positive relationship with the intention to transfer learning

The results reveal the insignificance of the direct impact of learning on the *intention to transfer learning* (0.010, t-value = 0.062 and p = 0.884). Hence, hypothesis (H2) is rejected.

H5a, H5b and H5c: the training environment has a significant positive relationship on reaction, learning and intention to transfer learning.

The results do not demonstrate support for the first hypothesis (H5a) of a direct impact from the training environment on reaction. The training environment has an insignificant direct impact on reaction (path estimate = 0.032, t-value = 0.488 and an insignificance level of p = 0.625).

The results shows the significance of the path estimate (0.148, t-value = 2.391 and p = 0.017) between the training environment and learning. Therefore, hypothesis (H5b) is supported, as the training environment has a positive and direct impact on learning.

The results reveal the insignificance of the path estimate (-0.025, t-value = -0.360 and p = 0.719) between the training environment and intention to transfer learning. Hence, hypothesis H5c is rejected.

H6a, H6b and H6c: the training methods have a significant positive relationship with reaction, learning and intention to transfer learning.

The results indicate that the positive direct impact of the training methods on reaction is not significant (0.068, t-value = 0.068 and p = 0.303). Hence, hypothesis (H6a) is not supported, as the positive direct impact of the training environment on reaction is not significant.

The results show that the positive relationship between the training methods and learning is not significant (0.002, t-value = 0.040 and p = 0.968). Hence, hypothesis (H6b) is rejected.

According to the results, the training methods have a non-significant positive impact on intention to transfer learning (0.025, t-value = 0.376 and p= 0.707). Therefore, hypothesis (H6c), which explains the impact of the training methods on intention to transfer learning, is rejected.

H7a, H7b and H7c: trainer performance and behaviour has a significant positive relationship with reaction, learning and intention to transfer learning.

The results reveal the significance of the positive direct impact of trainer performance and behaviour on reaction (0.137, t-value = 1.995 and p = 0.046). Hence, hypothesis (H7a) is supported.

Hypothesis (H7b) predicts trainer performance and behaviour influence learning. The path estimate reveals a significant positive and direct relationship between trainer performance and behaviour, and learning (0.129, t-value = 2.026 and p =0.043).

According to the results, trainer performance and behaviour has a non-significant positive impact on the intention to transfer learning (0.041, t-value = 0.587 and p = 0.557). Therefore, hypothesis (H7c), which explains the positive impact of trainer performance and behaviour on intention to transfer learning, is rejected.

5.11.1.3 Hypothesis testing for Survey 3

Table 5.16 shows the results of the hypothesis testing for Survey 3; five hypotheses represent the relationships between the latent constructs. The assessments of the parameter estimate results reveal that 3 of the 5 hypotheses are supported. The t-values and p-values for the remaining two relationships between the constructs were found to not be statistically significant of the relationship of between training content and training objectives: t-value = 0.869, p = 0.385; t-value = 1.765, p = 0.078

respectively. The results for the hypothesized model of Survey 3 after hypothesis testing are depicted in Figure 5.8.

H8: Behaviour has a significant positive relationship with results

Behaviour has a significant and direct impact on results (0.110, t-value = 2.117 and p = 0.034). Hence, hypothesis (H8) is supported.

H9a and H9b: Training content has a significant positive relationship with behaviour and results.

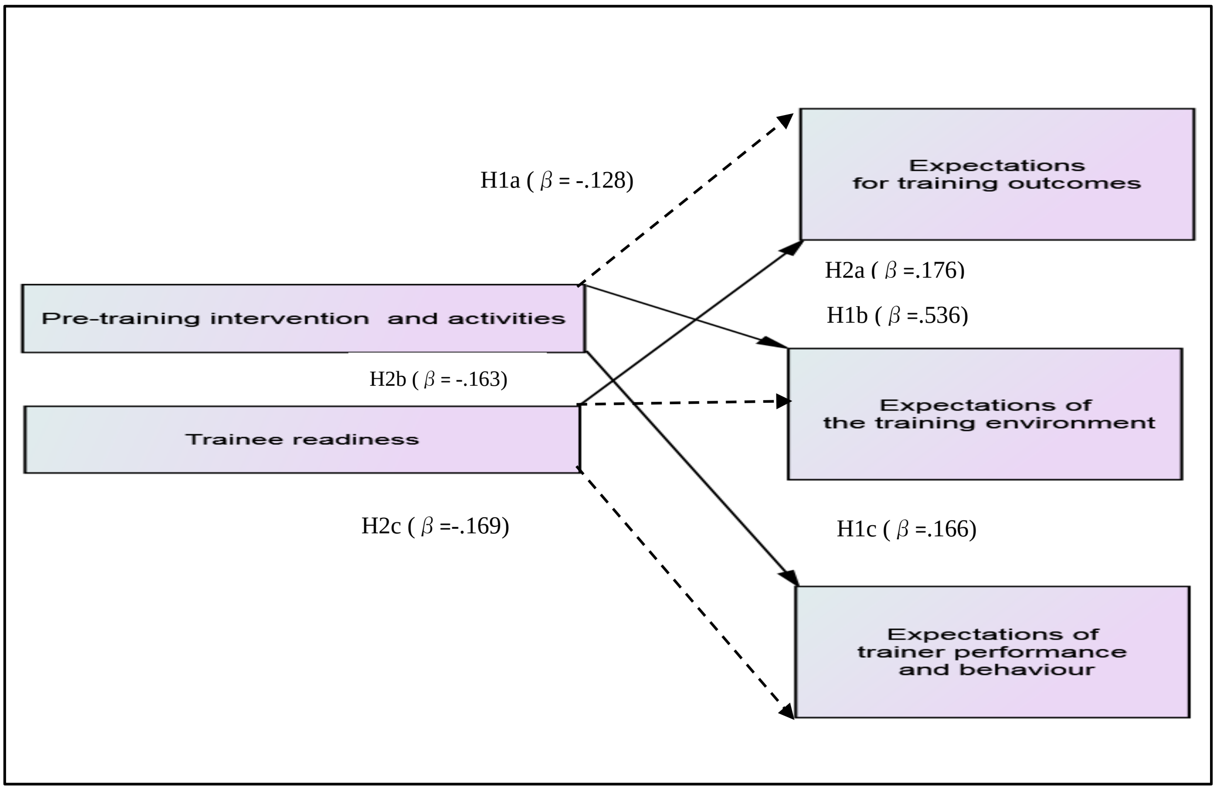
The results support hypothesis (H9a) and the direct relationship of training content with behaviour. Training content has a significant and direct impact on behaviour (path estimate = 0.159, t-value = 2.730 and p = 0.006).

The results shows that the path estimate (0.048, t-value = 0.869 and p = 0.385) between training content and results is not significant. Therefore, hypothesis (H9b), which suggests a positive direct impact of training content on results, is not supported.

H10a and H10b: Training objectives have a significant positive relationship with behaviour and results.

The results indicate a significant, positive and direct impact of training objectives on behaviour (0.095, t-value = 2.908 and p = 0.004). Hence, hypothesis (H10a) is supported, as the training objectives have a positive and direct impact on behaviour.

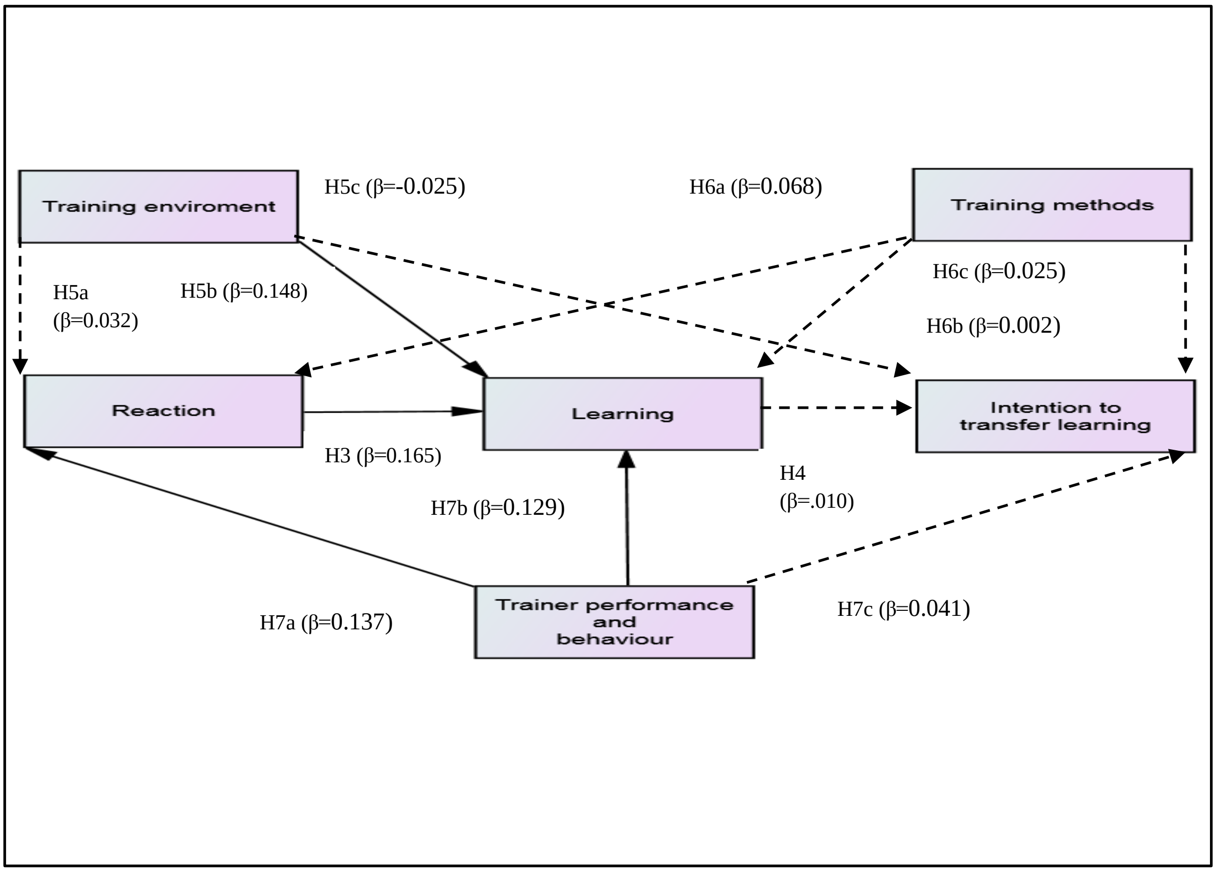
According to the results, training objectives do not influence results, (hypothesis H10b). The path estimate shows a non-significant, positive and direct relationship between training objectives and results (0.095, t-value = 1.765 and p = .078). Hence, hypothesis (H10b) is rejected.



**p≤ 0.05, **p ≤ 0.01; ***p ≤* 0.001 ⟶ Significant path; - - - - -► Non-significant path

Figure 5.7 Final hypothesised model of direct impact (survey 1)

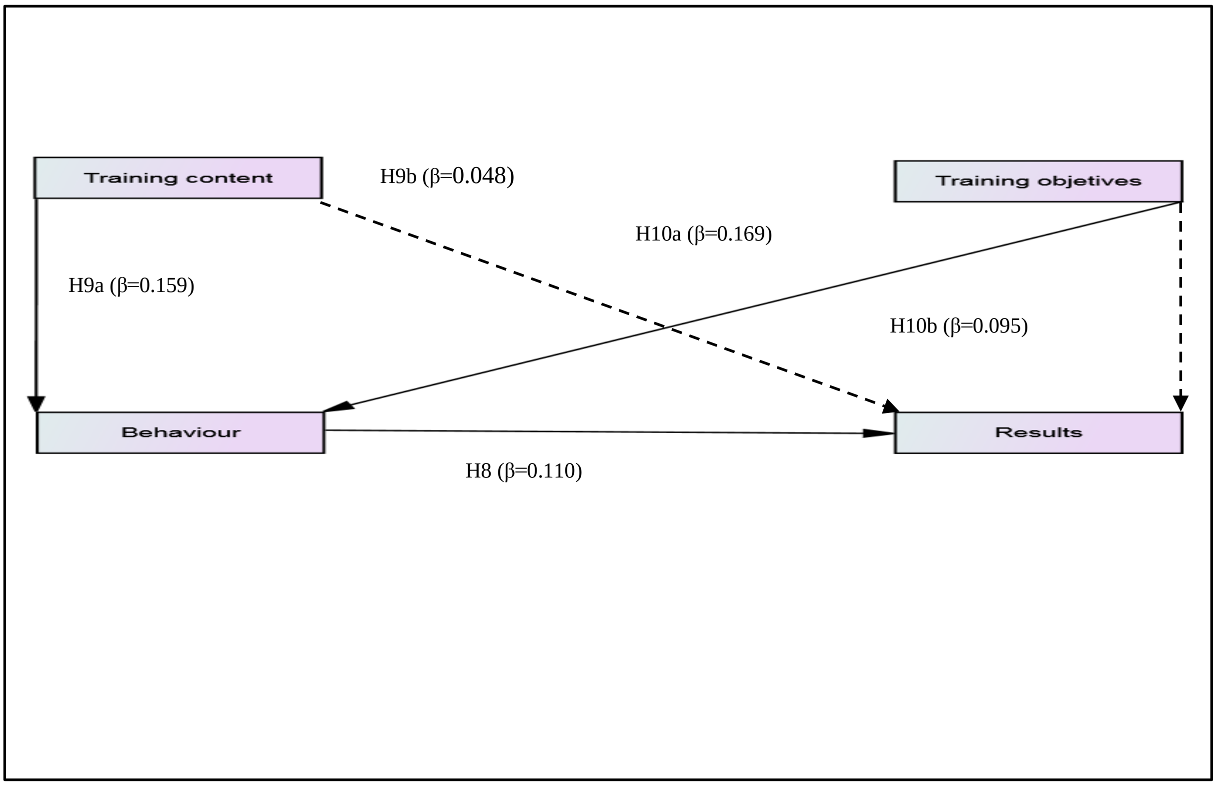
Figure 5.7 shows a significant and positive relationship between pre-training interventions and activities and expectations of trainer performance and behaviour (β = 0.166, p = 0.001), as well as expectations of the training environment (β = 0.536, p=0.001). It indicates a significant relationship between trainee readiness and expectations for the training outcomes (β = 0.176, p = 0.001). On the other hand, it indicates an insignificant relationship between pre-training interventions and activities, and expectations for the training outcomes (β = -0.128, p =.028). In addition, it illustrates an insignificant relationship between trainee readiness and expectations of trainer performance and behaviour, and on expectations of the training environment (β = -0.163, p= 0.001, β = -0.169, p=002; respectively).



p≤ 0.05, **p ≤ 0.01;* * ≤0.001 ——► Significant path; - - - - -► Non-significant path

Figure 5.8 Final hypothesised model of direct impact (Survey 2)

Figure 5.8 illustrates a significant and positive relationship between reaction and learning (β = 0.165, p= 0.008**). It shows a significant relationship between trainer performance and behaviour, and reaction (β =0.137, p=0.043*), and trainer performance and behaviour and learning (β= 0.129, p = 0.046*). In addition, it shows a significant effect of the training environment on learning (β =0.148, p=0.017*). On the other hand, it indicates a non-significant relationship between learning and intention to transfer learning (β = 0.010, p> 0.05). It shows an insignificant effect of the training environment on reaction (β = 0.032, p> 0.05) and, an insignificant relationship between training methods and reaction, and training methods and learning (β =0.068, β = -0.002, p> 0.05; respectively). It shows an insignificant effect of training environment, training methods and, trainer performance and behaviour on intention to transfer learning (β = -0.025, β =0.025, β =0.041, p> 0.05; respectively).



*$p \leq 0.05$, **$p \leq 0.01$; *** ≤ 0.001 ⟶ Significant path; - - - - -▸ Non-significant path

Figure 5.9 Final hypothesised model of direct impact (Survey 3)

Figure 5.9 shows a significant and positive relationship between behaviour and results (β=0.110, p = 0.034). In addition, it illustrates a significant and positive relationship between training content and training objectives, and behaviour (β= 0.159, p = 0.006, β= 0.095, p = 0.004; respectively). It shows an insignificant effect of training content and training objectives on results (β=0.048, β=0.095, p>0.05).

5.13 Testing moderation

Detecting a moderating influence is significant in social science research as the function of a moderating effect is that it changes the relationship between predictors and outcomes (Little et al., 2007). Moderator variables can affect the direction of the relation between a predictor and an outcome: enhancing or reducing the effect of the predictor (Baron and Kenny, 1986; Holmbeck, 1997; James and Brett, 1984; Kenny, 2015). Moderator variables address 'for whom' or 'when' a predictor is more strongly related to an outcome (Frazier et al., 2004).

In order to determine the existence of moderation and whether it is partial or full moderation, specific procedures prior to conducting the moderation analysis must be followed (Awang, 2012). Thus, those procedures were followed prior to conducting the moderation analysis for this research. In detecting a moderating effect in this research, regression analysis was conducted using Analysis of Moment

Structures (AMOS) by the maximum likelihood estimation (MLE) method. Prior to conducting the moderation analysis for this research, the procedures outlined by Aiken and West (1991) were followed. First, all the variables (predictors, moderate variables and outcomes [optional] were standardised using the descriptive statistics in SPSS (Dunlap and Kemery, 1987) in order to avoid multicollinearity (Cronbach, 1987; Dunlap and Kemery, 1987; Jaccard et al., 1990). Second, the interaction effect(s) was created which is the score of the multiplication between the moderate variable and predictors using a transformation analysis (Awang, 2012; Field, 2013; Hair et al., 2014; Jaccard et al., 1990). If the interaction variables are significant, then the moderation effect exists. Subsequent follow-up analyses on the slopes showed a connection between the predictor and outcome when the moderator levels were low, medium and high (Field, 2013).

5.13.1 Fit of the moderated models

In order to assess the moderating effect of training characteristics on the relationships between the four training outcomes (reaction, learning, behaviour and results), the validated SEM model was tested using AMOS v.21. In this research, the proposed theoretical model for Survey 2 has three moderators: the training environment, the training methods and the trainer performance and behaviour. The training environment, training methods, and trainer performance and behaviour moderate the relationship between reaction and learning, while the training environment, training methods, and trainer performance and behaviour moderate the relationship between learning and intention to transfer learning. The control variables are gender, age and the highest level of education achieved. Hence, in order to test moderation, the proposed theoretical model for Survey 2 evolved into six separate AMOS models to achieve a good fit (Awang, 2012; Hair et al., 2014). The moderating model for the training environment with regard to the relationship between reaction and learning yields an adequate fit; hence, it exhibited a very high degree of fit with the data, as shown in Table 15.17 chi square with degree of freedom (X^2/df) = 2.763, p = 0.01; goodness of fit index (GFI) = 0.978, adjusted goodness of fit index (AGFI) = 0.945 and root mean square error of approximation (RMSEA) = 0.066. The moderating model for training methods with regard to the relationship between reaction and learning yields an adequate fit, as indicated in Table 15.17; hence, it exhibited a very high degree of fit with the data, chi square with degree of freedom (X^2/df) = 2.909, p = 0.01; goodness of fit index (GFI) = 0.977, adjusted goodness of fit index (AGFI) = 0.943 and root mean square error of approximation (RMSEA) = 0.069. The moderating model for the trainer performance and behaviour with regard to the relationship between reaction and learning yields an adequate fit; hence, it exhibited a very high degree of fit with the data, as illustrated in Table 15.17 chi square with degree of freedom (X^2/df) = 2.930, p = 0.001; goodness of fit index (GFI) = 0.978, adjusted goodness of fit index (AGFI) = 0.945 and root mean square error of approximation (RMSEA) = 0.069. The moderating model for the training environment with regard to the relationship between learning and the intention to transfer learning yields an adequate fit, as illustrated in Table 15.18; hence, it exhibited a very high degree of fit with the data, chi square with degree of freedom (X^2/df) = 3.021, p = 0.000, goodness of fit index (GFI) = 0.977, adjusted goodness of fit index (AGFI) = 0.941 and root mean square error of approximation (RMSEA) = 0.071. The moderating model for the training methods with regard to the relationship between learning and the expectation of behaviour yields an adequate fit; hence, it exhibited a very high degree of fit with the data, as indicated in Table 15.17, chi square with degree of freedom (X^2/df) = 2.758, p = 0.002, goodness of fit index (GFI) = 0.980, adjusted goodness of fit index (AGFI) = 0.945 and root mean square error of approximation (RMSEA) = 0.066. The moderating model for trainer performance and behaviour with regard to the relationship between learning and the intention to transfer learning yields an adequate fit, as shown in Table 15.18; hence, it exhibited a very high degree of fit with the data, chi square with degree of freedom (X^2/df)=2.781, p = 0.001, goodness of fit index (GFI) = 0.979, adjusted goodness of fit index (AGFI) = 0.948 and root mean square error of approximation (RMSEA) = 0.067. Overall, the moderating models for Survey 2 were consistent with the suggested minimum criteria for model fit, which leads to the next step to test the hypotheses.

In this study, the proposed theoretical model for Survey 3 has two moderators: training content and training methods. The training content moderates the relationship between behaviour and results, while the training objectives moderate the relationship between behaviour and results. The control variables are age, gender and the highest level of education achieved. Hence, in order to assess the moderating effect, the proposed theoretical model of Survey 3 evolved into two separate AMOS models to achieve an adequate fit. The moderating model for training content with regards to the relationship between behaviour and results yields a very high degree of fit, as exhibited in Table 5.18, chi square with degree of freedom (X^2/df) = 2.801, $p < 0.05$, goodness of fit index (GFI) = 0.978, adjusted goodness of fit index (AGFI) = 0.945 and root mean square error of approximation (RMSEA) = 0.068. The moderating model for the training objectives with regards to the relationship between behaviour and results produced an adequate degree of fit, as illustrated in Table 5.18 chi square with degree of freedom(X^2/df) = 2.378, $p < 0.05$, goodness of fit index (GFI) = 0.985, adjusted goodness of fit index (AGFI) = 0.953 and root mean square error of approximation (RMSEA) = 0.059. Overall, the data fit for the Survey 3 moderating models was consistent with the recommended values; hence, the next stage was taken.

Table 5.17 Fit statistics for moderated models of Survey 2

Summary results of the moderating of effect training environment on the relationship on reaction						
Measure	***P***	**Df**	**X^2/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9

Hypothesised Model	.001	11	2.763	0.978	0.066	0.945
Note: **χ2** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						

Summary results of the moderating effect of training methods on the relationship between reaction and learning						
Measure	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	0.001	11	2.909	0.977	0.069	0.943
Note: **χ2** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						

Summary results of the moderating effect of trainer performance and behaviour on the relationship between reaction and learning						
Measure	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	0.001	11	2.930	0.978	0.069	0.945
Note: **χ2** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						

Summary results of the moderating effect of training environment on the relationship between learning and intention to transfer learning						
Measure	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	.000	11	3.021	0.977	0.071	0.941

Summary results of the moderating effect of training methods on the relationship between learning and intention to transfer learning						
Measure	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	.002	10	2.758	.980	.066	.945

Summary results of the moderating effect of trainer performance and behaviour on the relationship between learning and intention to transfer learning						
Measure	***P***	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	.001	11	2.781	0.979	0.067	0.948
Note: **χ2** = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						

Table 5.18 Fit statistics for moderated models for survey 3

Summary results of the moderating effect of training content on the relationship between behaviour and results						
	P	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9

Hypothesised Model	0.001	11	2.801	0.978	0.068	0.945
Note: $\chi 2$ = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						
Summary results of the moderating effect of training objectives on the relationship between behaviour and results						
	P	**Df**	**X²/df**	**GFI**	**RMSEA**	**AGFI**
Criteria	< .05		<5	≥ 0.9	≤ .08	≥ 0.9
Hypothesised Model	.011	9	2.378	0.985	0.059	0.953
Note: $\chi 2$ = Chi-square; **df** = degree of freedom; **GFI** = Goodness of fit index; **RMSEA** = Root mean square error of approximation; **AGFI** – Adjusted goodness of fit index.						

5.13.2 Hypothesis testing of the moderation models

In order to determine whether the moderator effect is significant, three links exist: the independent and the dependent variables, the moderator and the dependent variables, and the compound moderator with the independent (interaction effect) and dependent variables (Awang, 2012; Hair et al., 2014). Hence, a significant moderating effect is identified if the three required conditions are met: (1) if the relationship between the interaction effect and the dependent variables is significant, 2) if the relationship between the moderator and dependent variables is not significant, and (3) if the relationship between the independent and dependent variables is not significant (this type of moderation is called complete moderation) or if the relationship between the independent and dependent variables is significant (this type of moderation is called partial moderation) (Awang, 2012). To test the moderating impact of training characteristics as a moderator between reaction and learning, and between learning and intention to transfer learning, and between behaviour and results, the required three conditions above would be evaluated, as noted below.

As indicated in Table 5.19, comparisons are made between the simple effects (independent and dependent), the impact of the moderator on the dependent variables and the interaction effects. In the moderating models for Survey 2, the results show no significance for three paths— the training environment moderating relationships, training methods moderating relationships and trainer performance and behaviour moderating the relationship between learning and intention to transfer learning—as the interaction terms concerned were not statistically significant (β= -0.010, β= -0.004 and β= - 0.019, respectively; $p > 0.05$). This lack of a moderating effect is shown in Table 5.19, figure 5.10.

In the moderation models, for Survey 2 as depicted in Table 5.19; figure 5.10, the impact of reaction on learning was not moderated by the training environment because the impact of reaction on learning dropped from 0.147 ($p < 0.01$), in the direct relationship, to 0.001 ($p = 0.890$) with the inclusion of the interaction affect (training environment x reaction), as the interaction terms concerned were not statistically significant (β = 0.001). Also, the impact of reaction on learning was not moderated by the training methods because the direct impact of reaction on learning dropped from 0.151 ($p < 0.01$) to 0.023 ($p = 0.639$) with the inclusion of the interaction affect (training methods x reaction), as the interaction terms concerned were not statistically significant (β = 0.023); hence, this suggests that the training methods do not have a moderating role in the relationship between reaction and learning. Furthermore, moderation by trainer performance and behaviour is rejected in the relationship between reaction and learning, as the interaction terms concerned were not statistically significant (β = -0.009, $p > 0.05$), as depicted in Table 5.19. The match of trainer performance and behaviour in the model has a non-significant moderating impact between reaction and learning. As a consequence of the insignificant moderating impact of the training environment, training methods, and trainer performance and behaviour on the relationship between reaction and learning, and on the relationship between learning and intention to transfer learning as showed in figure 5.10, hence, the next phase which is slopes analysis was not taken.

Table 5.19 Summary of hypothesis testing of the moderating models of Survey 2

1	**Hypothesis testing of the moderating effect of training environment on the relationship between reaction and learning**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Reaction → learning	0.147	0.049	2.996	0.003**	Supported
	Training environment → learning	0.113	0.049	2.304	0.021*	Rejected
	Training environment x reaction → learning	0.001	0.047	.025	0.980	Rejected
	H5d: Training environment moderates the relationship between reaction and learning					Rejected
2	**Hypothesis testing of the moderating effect of training methods on the relationship between reaction and learning**					
	Path	**Estimate(β)**	**S.E**	**CR**	**P value**	**Results**
	Reaction → Learning	0.151	0.049	3.065	0.002**	Supported
	Training methods → Learning	0.016	0.049	0.333	0.739	Rejected
	Training methods x reaction → Learning	0.023	0.050	0.469	0.639	Rejected
	H6d: Training methods moderate the relationship between reaction and learning					Rejected
3	**Hypothesis testing of the moderating effect of trainer performance and behaviour on the relationship between reaction and learning**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Reaction → Learning	0.140	0.049	2.841	0.004**	Supported
	Trainer performance and behaviour → Learning	0.124	0.049	2.507	0.012*	Supported

	Trainer performance and behaviour x reaction → Learning	-0.009	0.048	-0.179	0.858*	Rejected
	H7d: Trainer performance and behaviour moderates the relationship between reaction and learning					Rejected
4	**Hypothesis testing of the moderating effect of the training environment on the relationship between learning and intention to transfer learning**					
	Path	**Estimate(β)**	**S.E**	**CR**	**P value**	**Results**
	Learning → Intention to transfer learning	0.063	0.050	1.269	0.205	Rejected
	Training environment → Learning	-0.021	0.050	-.411	0.681	Rejected
	Training environment x Learning → Intention to transfer learning	-0.010	0.050	-0.195	0.846	Rejected
	H5e:Training environment moderates the relationship between learning and intention to transfer learning					Rejected
5	**Hypothesis testing of the moderating effect of training methods on the relationship between learning and intention to transfer learning**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Learning → Intention to transfer learning	0.061	0.050	1.218	0.223	Rejected
	Training methods → Intention to transfer learning	0.037	0.050	0.738	0.460	Rejected
	Training methods x Learning → Intention to transfer learning	0.004	0.051	0.075	0.941	Rejected
	H5e:Training methods moderate the relationship between learning and intention to transfer learning					Rejected
6	**Hypothesis testing of the moderating effect of trainer performance and behaviour on the relationship between learning and intention to transfer learning**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Learning → Intention to transfer learning	0.057	0.050	1.142	0.253	Rejected
	Trainer performance and behaviour → Intention to transfer learning	0.031	0.050	0.629	0.530	Rejected
	Trainer performance and behviour x Learning → Intention to transfer learning	0.019	0.049	0.387	0.699	Rejected
	H5e: Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning					Rejected

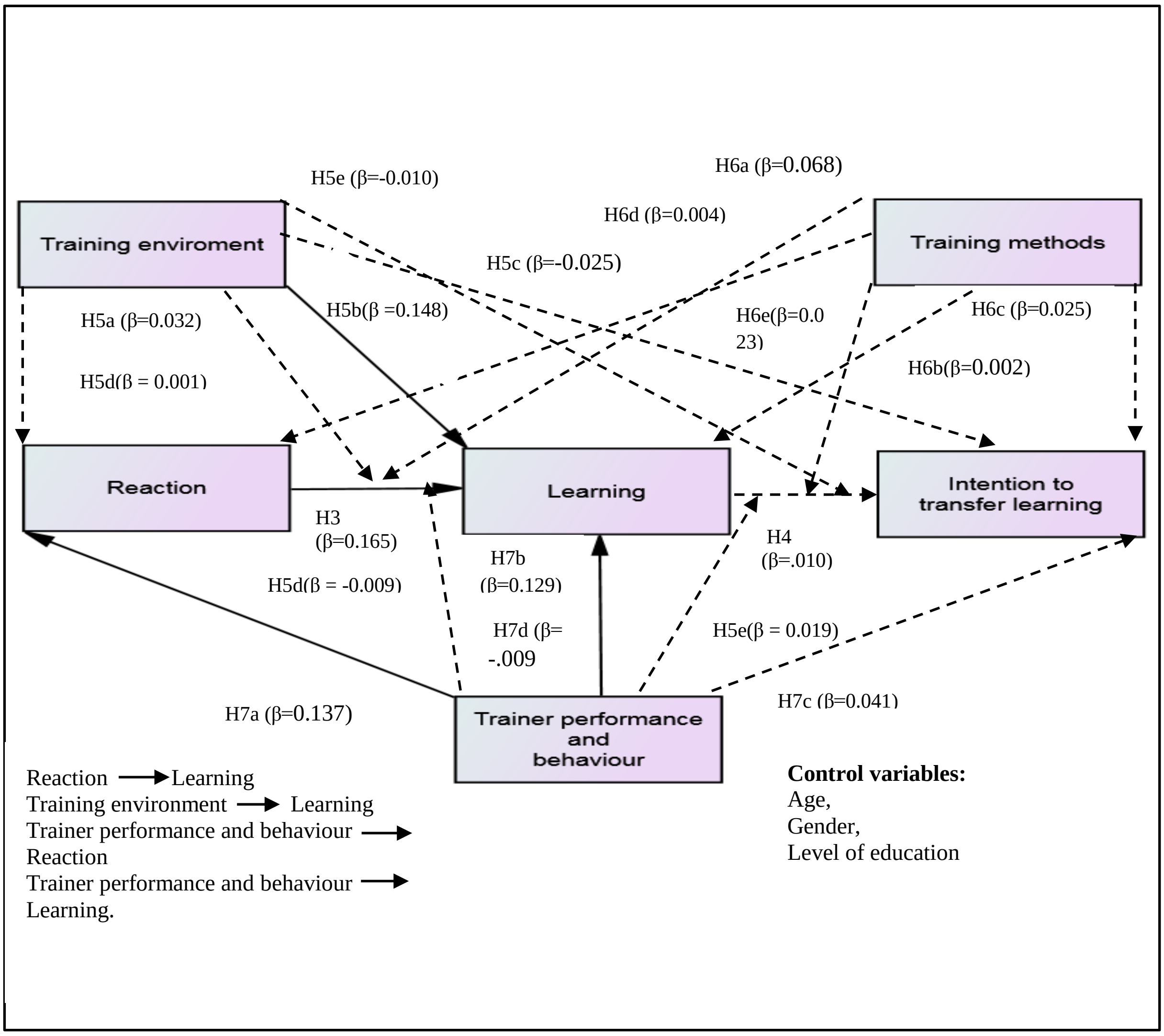
Note: * Significant at 0.001 levels (two tailed)**
**** Significant at 0.01 levels (two tailed)**
*** Significance at .05 levels (two tailed)**
(β)= Estimate = regression weight ; S.E = standard error; C.R = critical ratio

Although the moderating models fit of survey 3 is adequate as depicted in table 5.18, the results revealed an insignificant moderating impact of training content on relationship between behaviour and results since, the impact of behaviour on results dropped from 0.486 (p < 0.001), in direct relationship, to -0.041 (p =0.771) with the inclusion of the interaction affect (training content x behaviour) as the interaction terms concerned were not statistically significant (β = -.041) as showed in Table 5.20, figure 5. 11. Also, the impact of behaviour on results is not moderated by training objectives; since the direct impact of behaviour on results reduced from 0.525 (p <0.001) to 0.144 (p =0.415) with the inclusion of the interaction affect (training objectives x behaviour) as the interaction terms concerned were not statistically significant (β = 0.144, as indicated in Table 5.20; figure 5. 11; thus, suggesting the rejection of a moderating role of training objectives for the relationship between behaviour on results. As a consequence of the insignificant moderating impact of training content and training objectives on the relationship between behaviour and results as showed in figure 5.11, the next phase which is slopes analysis were not taken.

Table 5.20 Summary of hypothesis testing of moderating models of Survey 3

1	**Hypothesis testing of the moderating effect of training content on the relationship between behaviour and results**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Behaviour → Results	0.486	0.164	2.969	0.003***	Supported
	Training content → Results	0.266	0.157	1.694	0.090	Rejected
	Training content x behaviour → Results	-0.041	0.142	-0.292	0.771	Rejected
	H9c: training content moderates the relationship between behaviour and results					Rejected
2	**Hypothesis testing of the moderating effect of training objectives on the relationship between behaviour and results**					
	Path	**Estimate (β)**	**S.E**	**CR**	**P value**	**Results**
	Behaviour → Results	0.525	0.160	3.286	0.001***	Supported
	Training objectives → results	0.276	0.215	1.281	0.200*	Rejected
	Training objectives x behaviour → Results	0.144	0.176	0.816	0.415*	Rejected
	H10c: training objectives moderate the relationship between behaviour and results					Rejected

Note: * Significant at 0.001 levels (two tailed)**
**** Significant at 0.01 levels (two tailed)**
*** Significance at .05 levels (two tailed)**
(β)= Estimate = regression weight ; S.E = standard error; C.R = critical ratio

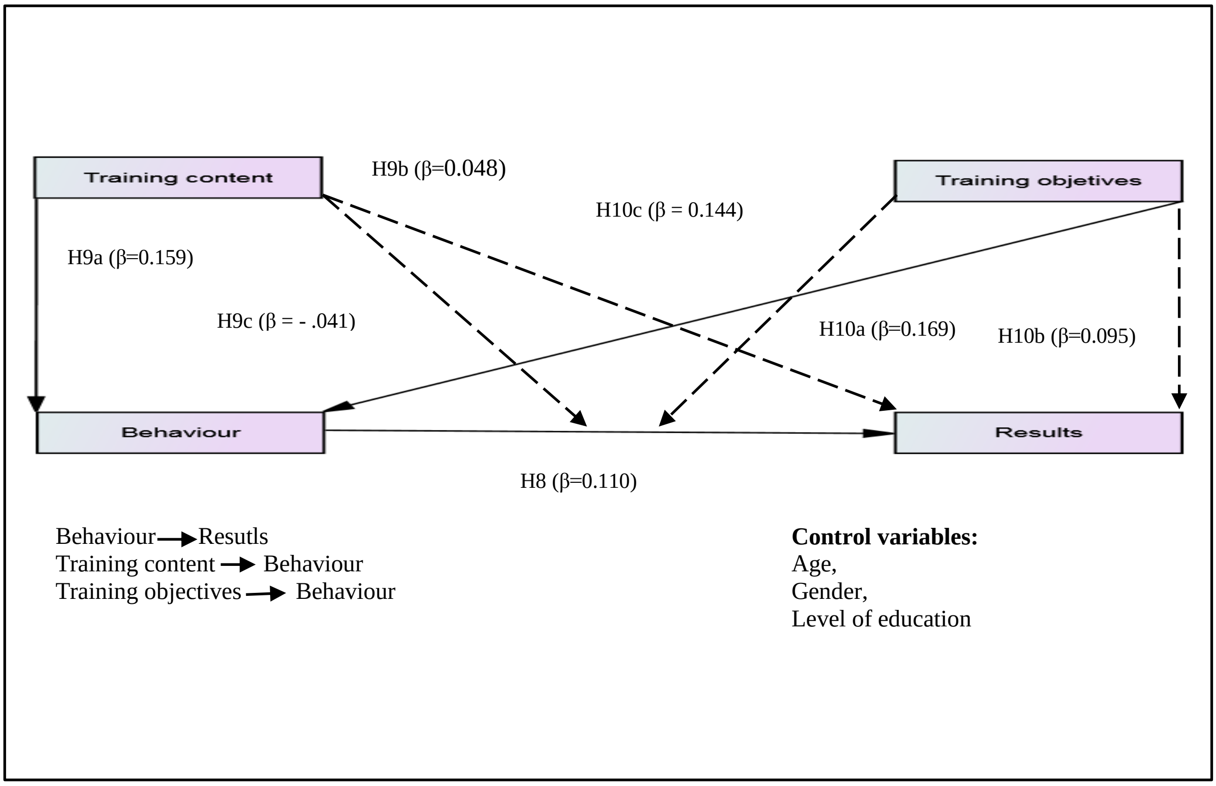


*p≤ 0.05, **p ≤ 0.01;* *** ≤0.001 ⟶ Significant path; - - - - → Non-significant path

Figure 5.10 Final hypothesized model of survey 2 samples after hypotheses testing of moderating effect

Figure, 5.10 illustrates a significant and positive relationship between reaction and learning β = 0.165, p= 0.008**). It shows a significant relationship between trainer performance and behaviour on (β =0.137, p=0.043*) and on learning (β= 0.129, p = 0.046*). In addition, it shows a significant effect of the training environment on learning (β =0.148, p=0.017*). On the other hand, it indicates non-significant relationship between learning and intention to transfer learning (β = 0.010, p> 0.05). It also indicates insignificant relationship between the training environment, training methods on reaction (β = 0.032, β= 0.068, p> 0.05; respectively) and the insignificant relationship between training methods and learning (β =0.002, p> 0.05). In addition it illustrates training characteristics (e.g., training environment, training methods and trainer performance and behaviour) have no moderating impact on the relationships between reaction and learning (β=-0.010, β = 0.004, β = 0.019, p> 0.05; respectively) or between learning and intention to transfer learning (β= 0.001, β = 0.023, β = -0.009, p> 0.05; respectively).

In summary, the results of this study reveal that reaction and learning are significantly related. Trainer performance and behaviour have a significant relationship with reaction and with learning. The training environment has a significant relationship with learning.



*p≤ 0.05, **p ≤ 0.01; **** ≤0.001 ⟶ Significant path; - - - - → Non-significant path

Figure 5.11 hypothesized model of survey 3 samples after hypotheses testing of moderating effect

Figure, 5.11 shows a significant and positive relationship between behaviour and results (β=0.110, p = 0.034). In addition, it illustrates a significant and positive relationship between training content and training objectives on behaviour (β= 0.159, p = 0.006, β= 0.095, p = 0.004; respectively). It indicates an insignificant relationship between training content and training objectives on results (β=0.048, β=0.095, p>0.05; respectively). In addition it illustrates that training characteristics (e.g., training content, training objectives) have no moderating impact on the relationship between behaviour and results (β = -0.041, β= 0.144, p>0.05; respectively).

In summary, the results of this study reveal that behaviour and results are significantly related. Training content and training objectives have a significant relationship with behaviour.

5.14 Conclusion

In conclusion, this chapter provides the results from the final filtered scales and hypotheses testing of the three survey questionnaires. Kaiser-Meyer-Olkin (KMO) and Bartlett's test were performed to determine if the results were applicable for confirmatory factor analysis to be conducted. Prior to inferring the findings, reliability and construct validity tests were also performed in which all the measurement scales were found to be satisfactory for the data from the three survey questionnaires. For Survey 1, not all the independent predictor variables were found to be positively and significantly correlated to the dependent variables. The findings of the data analysis and hypothesis testing for the final model, Survey 1 revealed that pre-training intervention and activities had a strong impact on expectations of trainer performance and behaviour, and on expectations of the training environment, while trainee readiness had a strong effect on expectations for training outcomes. On the other hand, pre-training intervention and activities had a negative impact on expectations for training outcomes; trainee readiness was found to not be significantly correlated to expectations of the training environment, and to expectations of trainer performance and behaviour.

In Survey 2, all the variables were found not to be positively and significantly related to the dependent variables. The results of the data analysis and hypothesis testing for the final model for Survey 2 found a significant relationship between reaction and learning, while trainer performance and behaviour had a strong effect on reaction. The training environment, and trainer performance and behaviour had a strong effect on learning. The training environment and the training methods were found not to be significantly correlated to reaction. Furthermore, training methods were found not to be significantly correlated to learning. Learning was found not be significantly correlated to intention to transfer learning, while the training environment, training methods and trainer performance and behaviour were found to have a non-significant relationship with intention to transfer learning. Although there was a significant relationship between reaction and learning, it was found that the training environment, training methods, and trainer performance and behaviour did not have a significant moderating effect on the relationship between reaction and learning. It was found that the training environment, training methods and, trainer performance and behaviour did not have a significant moderating effect on the relationship between learning and intention to transfer learning.

In Survey 3, not all the independent predictor variables were found to be positively and significantly correlated to the dependent variables. The findings of the data analysis and hypothesis testing of the final model for Survey 3 indicated that significant and positive relationships were found between behaviour and results, and training content and training objectives were found to be significantly correlated to behaviour, but training content and training objectives were not found to be significantly correlated to results. Although there was a significant relationship between behaviour and results, the training content and training objectives were not found to have a significant moderating effect on the relationship between behaviour and results.

The effect of reaction on learning depended on trainer performance and behaviour. Further, the effect of behaviour on results depended on the training content and training objectives. In the next chapter, the findings of this research will be presented and discussed.

Chapter Six: Discussion

6.0 Introduction

This chapter presents the conclusions and implications of the research findings from this study. This aims to evaluate of the effect of training characteristics on training effectiveness. The objective of this study is to investigate the relationships and predictive impacts of the independent variables (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour training content, and training objectives) on the dependent variables (i.e., expectations of the training environment, expectations of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results). This study also investigates the moderating effect of training characteristics (i.e., training environment, methods, content, objectives, and trainer performance and behaviour) on the relationship between training outcomes (i.e., reactions, learning, intention to transfer learning, behaviour and results). This is a longitudinal study in which data were collected from trainees in health and safety training programme in the national oil and gas industry in Oman at three different periods of time (before training, immediately after completed training and 2–3 months after training). The aim of this chapter is to synthesise the results of the three questionnaires.

This chapter is organised into three sections: 6.2., 6.3.and 6.4. The first section presents the population and sample issues. The second section reviews the results and compares them with the extant literature, while the third section discusses the research objectives based on the results.

6.1 Population and sample issue

This research was conducted on three separate occasions by examining the national oil and gas industry in Oman. In order to collect the data, random sampling was carried out (Blumberg et al., 2008; Bryman and Bell, 2015) with all levels of employees for three national oil and gas companies out of more than 300 companies that operate in the oil and gas industry in Oman (Oxford business group, 2011). The main data collection was conducted by distributing a total of 800 questionnaires in separate surveys. The first (Survey 1) was distributed to 800 employees in the oil and gas industry in Oman two weeks before they began health and safety training. Out of 800 questionnaires, 432 were returned, which indicates a response rate of 54%. For the second (Survey 2), which was administered immediately after training, 423 out of 800 questionnaires were returned, which represented a response rate of 52.87%. In the third (Survey 3), which was administered 2–3 months after training, 417 out of 800 questionnaires were returned, which shows a response rate of 52.12%. A sufficiently large sample was used in this research to represent the total population, establish test reliability and employ structural equation modelling (SEM) to analyse the proposed conceptual framework (Byren, 2001;

Collis and Hussey, 2003). According to Comrey and Lee (1992) and Tabachnich and Fidell (2001), a sample size 100 is considered poor, 200 is reasonable, 300 is good, 500 is very good, and more than 1000 is excellent. Although this research covered a large sample and gave a substantive representation of the total population of the national oil and gas industry in Oman, the response rate for the three questionnaires was moderate because participation was voluntary, as mentioned in the methodology chapter.

In order to analyse the preliminary data, it is important to conduct data screening by identification of missing data or outliers. There are a number of suggestions for handling missing data or outliers to ensure the accuracy of the data analysis (Hair et al., 2006). According to Norusis (1997), null responses should be removed, while Olinsky et al. (2003) and Kline (2011) maintain that if the missing data is less than 5% of the total data and the reason for the incomplete data is ignorable, then a simple analysis should yield acceptable results. Survey 1 showed 17 missing samples out of 423, which is a rate of 4%. Survey 2 showed 21 missing samples out of 422, which is a rate of 4.7%. Survey 3 showed 18 missing samples out of 409 at a rate of 4.4%. These missing samples were deleted from the data and the remaining data were tested for outliers. The univariate outliers were detected by examining the frequency distributions (Kline of Z-scores, 2011), which revealed four cases of univariate outliers in Survey 1 and none in Surveys 2 and 3 (Table 5.5).

6.2 Instrument validation

This research used convergent and discriminant validity to ensure the accuracy of the measurements. Convergent validity is evaluated by factor loading, average variance extracted AVE, and composite reliability (Hair et al., 2014). The minimum cut off point for factor loading is <0.5, the AVE is >0.5, and composite reliability is >0.6. The instrument of convergent validity exceeded the minimum values for factor loading, (AVE), and composite reliability. Therefore, all the figures present a high level of convergent validity.

Discriminant validity is evaluated by contrasting the average variance extracted (AVE) values for any two constructs with the square of the correlation estimate (Hair et al., 2014). Discriminant validity is significant if the average variance extracted (AVE) of any construct is greater than the squared correlation. The results of this study show that the average variance extracted (AVE) values are greater than the squared correlation estimate for all the constructs, which shows significant level of discriminant validity in this study, section 5.10 (Table 5.14).

Cronbach's alpha (α) figure is used in this study to assess the internal reliability of the instruments. As a rule of thumb, ≤0.90 is treated as excellent reliability, 0.70–0.90 is treated as highly reliable, 0.50–

0.70 show moderate reliability, and ≤0.50 represented low reliability (Hinton et al., 2004). The results of this study reveal that all constructs have a reliability of 0.70–0.90, which demonstrated high internal reliability for measuring different observed variables under each construct. Overall, the three survey samples in this study show high levels of validity and internal reliability.

6.3 Hypothesis testing

This study examines potential impact of training characteristics on expectations and training outcomes during three separate periods (before training, immediately after completed training and 2–3 months after training). A data analysis and hypothesis testing for the final model for Survey 1 reveal that pre-training interventions and activities have a strong impact on expectations regarding trainer performance and behaviour, and on expectations regarding the training environment. Meanwhile, the results of this study indicate that trainee readiness had a strong impact on expectations regarding training outcomes. Pre-training interventions and activities have no direct impact on expectations regarding training outcomes. Moreover, this study finds that expectations regarding trainer performance and behaviour, and expectations regarding the training environment are not affected by trainee readiness.

The data analysis and hypotheses testing for the final model for Survey 2 show that reaction has a strong effect on learning. Learning has no direct impact on intention to transfer learning and reaction is influenced by trainer performance and behaviour, while, reaction is not affect by the training environment and training methods. Furthermore, the results show that learning is affected by the training environment and trainer performance and behaviour. Training methods have an insignificant impact on learning and intention to transfer learning, and further the training environment, training methods, and trainer performance and behaviour do not moderate the relationship between reaction and learning and, between learning and intention to transfer learning.

Third, the results from the data analysis and hypotheses testing for the final model in Survey 3 indicate that behaviour and results are significantly related. Furthermore, the results find that training content and training objectives have a significant positive influence on behaviour. Training content and objectives were not found to influence results. The moderating variables, including training content and training objects, do not moderate the relationship between behaviour and results.

This study has previously discussed the impact of training characteristics on Kirkpatrick's four levels (reaction, learning, behaviour and results), as well as intention to transfer learning in order to improve employees' performance. The training characteristics that affect training outcomes are the training environment, training methods, training content, training objectives, and trainer performance and trainer behaviour. This study investigates the moderating effect of these factors on the relationship between training outcomes (reaction, learning, intention to transfer learning, behaviour and results). Further this research examines the impact of training characteristics prior to training such as pre-training intervention and practices, and trainee readiness on expectations of the training environment, expectations of trainer performance and behaviour, and on expectations for training outcomes.

This section summarises the hypotheses based on data collected at three different points in time (before training, immediately after training, and 2–3 months after training) and to determine whether the proposed hypotheses are supported by the data. Table 6.1 shows the proposed hypotheses of the final revised models for the three surveys (Figures 5.7, 5.10, and 5.11). It illustrates that a total of 30 research hypotheses were tested to explore whether the independent variables significantly explained the dependent variables: 11 out of 30 research hypotheses were supported, and 19 were rejected by the data analysis.

Table 6.1 Results of the research hypotheses

Survey 1 (before training)			
	Hypothesis number	**Description**	**Results**
1	H1a	Pre-training interventions and activities have a significant positive relationship with expectations for training outcomes.	No (t= -2.198 , p=.028*)
2	H1b	Pre-training interventions and activities have a significant positive relationship with expectations of the training environment.	Yes (t= 10.400, p=.001***)
3	H1c	Pre-training interventions and activities have a significant positive relationship with expectations of the trainer's performance and behaviour.	Yes (t=4.379, p= .001***)
4	H2a	Trainee readiness has a significant positive relationship with expectations for training outcomes.	Yes (t=3.435, p=.001***)
5	H2b	Trainee readiness has a significant positive relationship with expectations of the training environment.	No (t=-3.065,p=.002**)
6	H2c	Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour.	No (t= -3.344,p=.001***)
Survey 2 (immediately after completed training)			
	Hypothesis number	**Description**	**Results**
7	H3	Reaction has a significant positive relationship with learning.	Yes (t=2.643, p= 0.008**)
8	H4	Learning has a significant positive relationship with intention to transfer learning.	No (t=0.146, p=0.884*)
9	H5a	The training environment has a significant positive relationship with reaction.	No (t=0.488, p=0.625*)
10	H5b	The training environment has a significant positive relationship with learning.	Yes (t=2.391, p=0.017*)
11	H5c	The training environment has a significant positive relationship with intention to transfer learning.	No (t=-0.360p=0.719*)
12	H6a	Training methods have a significant positive relationship with reaction.	No (t=0.068, p=0.303*)
13	H6b	Training methods have a significant positive relationship with learning.	No (t=0.040, p=0.968*)
14	H6c	Training methods have a significant positive relationship with intention to transfer learning.	No (t=0.376, p=0.707*)

15	H7a	Trainer performance and behaviour have a significant positive relationship with reaction.	Yes (t=1.995, p=0.846*)
16	H7b	Trainer performance and behaviour have a significant positive relationship with learning.	Yes (t=2.026, p=0.043*)
17	H7c	Trainer performance and behaviour have a significant positive relationship with intention to transfer learning.	No (t=0.112,p=0.557*)
18	H5d	The training environment has a moderate relationship with reaction and learning.	No (t=0.025, p=0.980*)
19	H5e	The training environment has a moderate relationship with learning and intention to transfer learning.	No (t=-0.195,p=0.846*)
20	H6d	Training methods have a moderate relationship with reaction and learning.	No (t=0.469,p=0.639*)
21	H6e	Training methods have a moderate relationship with learning and intention to transfer learning.	No (t=0.075, p=0.941*)
22	H7d	Trainer performance and behaviour have a moderate relationship with reaction and learning.	No (t=-0.179, p=0.858*)
23	H7e	Trainer performance and behaviour have a moderate relationship with learning and intention to transfer learning.	No (t=0.387,p=0.699*)
Survey 3 (2–3 months after training)			
	Hypothesis number	**Description**	**Results**
24	H8	Behavioural change has a significant positive relationship with results.	Yes (t=2.117, p=0.034*)
25	H9a	The training content has a significant positive relationship with behavioural change.	Yes (t=2.730, p=.006**)
26	H9b	The training content has a significant positive relationship with results.	No (t=0.869, p=0.385*)
27	H10a	The training objectives have a significant positive relationship with behavioural change.	No (t=2.908, p=0.004**)
28	H10b	The training objectives have a significant positive relationship with results.	No (t= 1.765,p=0.078*)
29	H9c	The training content moderates the relationship with behavioural change and results.	No (t= -0.292,p=0.771*)
30	H10c	The training objectives moderate the relationship between behavioural change and results.	No (t=0.816,p=0.415*)

Note: * Significant at 0.001 levels (two tailed)**
**** Significant at 0.01 levels (two tailed)**
*** Significance at .05 levels (two tailed)**

6.4 Discussion on the results of Survey 1

The final revised model of Survey 1 consists of five constructs and six relationships, as shown in Figure 5.7, and Table 6.1. The hypotheses tested by Survey 1 are discussed below. The findings show that expectations of trainer performance and behaviour, expectations of the training environment, are affected by pre-training interventions and activities; see Table 6.2 and Table 6.7. There is an insignificant relationship between pre-training interventions and activities and expectations for training outcomes; see Table 6.2 and Table 6.7. In turn, a trainee’s readiness influences their expectations for the training outcomes; Table 6.4 and Table 6.7. There is an insignificant relationship between a trainee’s readiness and their expectations of trainer performance and behaviour, as well as expectations of the training environment; Table 6.5, Table 6.6 and Table 6.7. This research divided the pre-training construct into two features: (1) pre-training intervention and activities, and (2) trainee readiness. These factors are expected to influence expectations of training characteristics and expectations for training outcomes. Further details are discussed next.

H1a:Pre-training interventions and activities have a significant positive relationship with expectations for training outcomes. (Rejected)

H1b: Pre-training interventions and activities have a significant positive relationship with expectations of the training environment. (Accepted)

H1c:Pre-training interventions and activities have a significant positive relationship with expectations of the trainer performance and behaviour. (Accepted)

H2a: Trainee readiness has a significant positive relationship with expectations for training outcomes. (Accepted)

H2b: Trainee readiness has a significant positive relationship with expectations of the training environment. (Rejected)

H2c: Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour. (Rejected)

6.4.1 The relationship between pre-training interventions and activities, and trainees' expectations for training.

Pre-training interventions and activities or materials identified before training or practice session can help to develop the potential for learning and transfer of learning, as well as the efficiency and effectiveness of practice during training (Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). Therefore, pre-training interventions and activities are very important for setting expectations around training, and supporting learning and the transfer of knowledge. Pre-training interventions aim to enhance the learning process through attentional advice, goal orientation, advance organisers, preparatory information, and pre- training briefs (Cannon-Bowers et al., 1998; Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010) in order to increase trainees' self-efficacy and preparation for training. Advance organisers are defined as "a category of activities such as outlines, text, aural descriptions, diagrams and graphic organisers that provide the learner with a structure for information that will be provided in the practice environment" (Cannon-Bowers et al., 1998, p. 298). Pre-training briefs are defined as "sessions where team performance expectations can be clarified, and roles and responsibilities established before team practice" (Cannon-Bowers et al., 1998, p.307). Also, Tannenbaum and Yukl (1992) and Baldwin et al., (1991) showed that trainees reported greater intention to use their training when they received relevant information prior to a training programme.

Before actually taking a training programme, a trainee often has an expectation about the quality of the design and delivery of the training, and its job relevance. Such expectations may be based upon pre-training activities or the trainee's readiness. Therefore, this research divided the trainees' expectations for training into: (1) expectations of the training characteristics construct which included two factors: expectations of trainer performance and behaviour, and expectations of the training environment and, (2) expectations for training outcomes.

6.4.1.1 Pre-training interventions and activities and expectations around the training outcomes

H1a:Pre-training interventions and activities have a significant positive relationship with expectations for training outcomes.

The findings of this study do not support the hypothesis that pre-training interventions and activities have a significant positive impact on expectations for training outcomes (H1a, $\beta = -0.128$, $p < 0.05$, $t = -2.198$). This finding does not support the results in the literature, which indicate that pre-training interventions and activities influence training outcomes (Cannon-Bowers et al., 1998; Mesmer-Magnus and Viswesvaran, 2010) as depicted in Table 6.2. Cannon-Bowers et al., (1998) suggested that the extent and strength of learning and transfer will depend largely on the particular way that trainees are prepared for practicing the task components. Magnus and Viswesvaran, (2010) found that pre-training intervention (e.g. advance organisers, goal orientation, preparatory information) enhance learning. Hicks and Klimoski (1987) found that trainees who receive a realistic training preview and a high degree of choice are more likely to believe the workshop was appropriate for them. Trainees are less likely to have expectations about the training outcomes if pre-training intervention and activities are not provided for trainees before training. This contrary finding is justified by the probability that individual differences (include personality, ability, or demographics) should have effects on the effectiveness of certain pre-training interventions in learning (Colquitt et al, 2000; Magnus and Viswesvaran, 2010). Thus, trainees provided with pre-training activities will not always develop more expectations for the training outcomes, as revealed in this study.

Table 6.2 A summary of relevant research on training characteristics and training expectations relationships: pre-training interventions and activities, and expectations for training outcomes

Researcher/s	Independent variable	Dependent variable	Major Findings
Cannon-Bowers et al.,(1998)	Pre-training interventions and activities (e.g. advance Organisers)	Training outcomes (utility and effectiveness of practice in training).	Pre-training interventions and activities (e.g. advance organisers) are effective in improving practice in training.
	Pre-training interventions and activities (e.g. goal orientation)		Pre-training interventions and activities (e.g. mastery goals) are effective in promoting learning.
	pre-training interventions and activities (e.g. preparatory information)		Pre-training interventions and activities (e.g. preparatory information) is effective in training performance.

Mesmer-Magnus and Viswesvaran, (2010)	Pre-training interventions and activities (e.g. advance organisers)	Learning outcomes/ cognitive learning, skill, and affective learning	Pre-training interventions and activities (e.g. advance organisers) provide trainees with cognitive and skill-based learning.
	Pre-training interventions and activities (e.g. goal orientation)		Pre-training interventions and activities (e.g. a pre-training goal orientation) promotes cognitive skill-based and affective learning.
	Pre-training interventions and activities (e.g. preparatory information)		Pre-training interventions and activities (e.g. preparatory information) promotes cognitive, skill, and affective learning.
Hicks and Klimoski (1987)	Pre-training interventions and activities (e.g. prior information individuals receive)	Training outcomes (the perceived appropriateness of training).	Trainees who received (pre-training interventions and activities (e.g. the realistic training preview) and those who had a high degree of choice were more likely to believe the workshop was appropriate for them to take, they were better able to profit from training.
Al-Mughairi, (2018)	Pre-training activities and activities	Expectations for the training outcomes	Pre-training interventions and activities had an insignificant impact on expectations for training outcomes.
	Pre-training interventions and activities	Expectations of the training environment	Pre-training interventions and activities had a significant positive relationship with the trainees' expectations of the training environment.
	Pre-training interventions and activities	expectations of trainer performance and behaviour	Pre-training interventions and activities had a significant positive relationship with expectations of trainer performance and behaviour.

6.4.1.2 Pre-training interventions and activities and expectations of the training environment

H1b: Pre-training interventions and activities have a significant positive relationship with expectations of the training environment.

The findings of this study confirmed that pre-training interventions and activities had a positive significant impact on the trainees' expectations of the training environment (H1b, $\beta = 0.536$, $p = 0.001$, $t = 10.400$). It was also found that pre-training interventions and activities were the most significant factors related to the expectations of the training environment in the pre-training stage with a path coefficient of 0.536. This finding is consistent with studies by Cannon-Bowers (1998) and Mesmer-Magnus and Viswesvaran (2010) as depicted in Table 6.2. Therefore, trainees provided with pre-training activities will have more expectations about the training environment, as revealed in this study. Thus study supports that pre-training interventions and activities contributed positively to helping individuals set expectations about the training environment.

6.4.1.3 Pre-training interventions and activities and expectations of trainer performance and behaviour

H1c: Pre-training interventions and activities have a significant positive relationship with expectations of the trainer's performance and behaviour.

As discussed in Chapter 2, section 2.10, providing pre-training interventions and activities is essential to trainees' expectations, as trainees develop more expectations when they are provided with pre-training interventions and activities. The findings in this study confirmed the hypothesis that pre-training interventions and activities have a significant positive influence on the expectations of trainer performance and behaviour (H1c, $\beta = 0.166$, $p = 0.001$, $t = 4.386$). This factor contributed most strongly to the expectations of trainer performance and behaviour with a path coefficient of 0.166. These results are in accordance with the literature. Studies by Cannon-Bowers (1998) and Mesmer-Magnus and Viswesvaran (2010) also support the hypothesis that pre-training intervention and activities have a positive effect on trainee's expectations of trainer performance and behaviour. Specifically, Mesmer-Magnus and Viswesvaran (2010) who found that training intervention and activities and learning are related significantly as depicted in Table 6.2. Thus, trainees with pre-training intervention and activities will always develop more expectations of trainer performance and behaviour, as revealed in this study. Therefore, this study confirms that pre-training interventions and activities contributed positively to helping individuals set expectations about trainer performance and behaviour.

6.4.2 The relationship between trainee readiness and trainee's expectations for training

Trainee readiness could be one of the main pre-training interventions or pre-training factors that could help them benefit from training (Machin and Treloar, 2004; Tannenbaum et al., 1993), as well as a critical trainee characteristic (Holton et al., 2000). Therefore, readiness plays a crucial role in setting trainees' expectations by giving them basic prior knowledge and skills to perform the training activities (Bhatti et al., 2013; Khan and Mirz, 2016) as shown in Table 6.3. Bhatti et al., (2013) suggest that prior knowledge and skills about training activities motivate trainees to participate in training activities in order to transfer the learned skills in the workplace. Khan and Mirz, (2016) suggest that trainees' expectations of the training are crucial for the acquisition of knowledge. Trainees' readiness refers to "the extent to which individuals are prepared to enter and participate in training" (Holton, 2005, p 45). Trainees have readiness to learn when they are in a state of preparedness to learn the things that they need to know in order to cope effectively with the learning experience (Khan and Mirz, 2016; Knowles et al., 2005). The literature defines readiness as having the necessary knowledge and skills to participate in the training or a willingness to try new things to benefit from the training programme (Baldwin et al., 2009). Ford and Noe (1987) showed that individuals' attitudes about past training experiences influenced the degree to which they expressed a need for new training. Machin (2002) claims that increases in individual training readiness before training help to ensure individual preparation to fully engage in a learning experience and to distribute training resources to those who expect to benefit most from development. As argued by Baldwin et al. (2009), each individual enters the training programme with certain expectations, motivations, and attitudes that determine their training outcomes. Thus, the trainee's readiness can help them develop expectations about the training outcomes (Bates et al., 2007), as well as the training characteristics. Trainee readiness includes unique individual attitudes, motivations and expectations for training (Baldwin et al., 2009; Tannenbaum et al., 1991). Khan and Mirz (2016) showed a positive relationship between expectations of the training and the acquisition of knowledge. Bhatti et al., (2013) found that learner readiness positively relates with transfer motivation. Readiness for training is also affected by the degree to which trainees are involved in assessing the training needs and planning the training, as well as the extent to which their expectations are clarified, the degree of choice, and other unexplored influences (Holton, 1996).

Table 6.3 A summary of relevant research on training characteristics and training expectations relationships: trainee readiness and expectations of training characteristics

Researchers	Independent variable	Dependent variable	Major Findings
Bhatti et al. (2013)	Trainee readiness	Transfer motivation	There was a significant relationship between learner readiness and transfer motivation. The relationship between learner readiness and training transfer is mediated by transfer motivation.
Khan and Mirz (2016)	Expectations from training	Acquired knowledge of the trainees	A positive correlation between expectations of training and acquired knowledge of the trainees.
Ford and Noe (1987)	An individual's attitude	Training needs	Those managers who believed training was useful reported a greater need for quality control skills than those managers who had a less favourable attitude towards training.

6.4.2.1 Trainee readiness and expectations for training outcomes

H2a: Trainee readiness has a significant positive relationship with expectations for training outcomes.

The findings in this study support the hypothesis that trainee readiness has a significant influence on expectations surrounding the training outcomes (expectation for utility reaction and expectation for performance improvement) (H2a, $\beta = 0.176$, $p = 0.001$, $t = 3.435$). Alliger et al., (1997) defined utility reaction as the utility of the training content for the work situation. The findings of this study illustrated that this factor is the most important element influencing expectations around the training outcomes with a coefficient path of 0.175. This finding is consistent with Tannenbaum et al., (1993) who showed that trainee readiness has a considerable influence on training and job-related outcomes. Meanwhile, Putter (2013) showed that trainee readiness was significantly correlated with the transfer of knowledge, Lim (2000) showed the significant influence of expected utility of training content on learning transfer, and Yaacob et al., (2016) found that trainee readiness has a significant impact on training effectiveness. Ruona et al., (2002) found that the individual's ability and motivation had a significant influence on utility reactions. Further, this finding is consistent with Buzrukova et al.,

(2012) who identified a significant influence of trainee readiness on training effectiveness. Therefore, trainees with greater readiness are more likely to benefit from training and to have more expectations regarding the relevance of their training. Trainees will develop more expectations for their training outcomes as their readiness increases, as revealed in this study. Table 6.4 summarises the findings of relevant research on the relationship between trainee readiness and expectations for training outcomes. Thus study supports that individual training readiness before training contributed positively to helping individuals set expectations about the training outcomes.

Table 6.4 A summary of relevant research on training characteristics and training expectations relationships: trainee readiness and expectations for training outcomes

Researchers	Independent variable	Dependent variable	Major Findings
Tannenbaum et al., (1993)	Trainee readiness	Training outcomes (reaction, learning, behaviour)	Trainee readiness was positively related to training outcomes and job-related outcomes
Putter (2013)	Trainee readiness	Training outcomes (learning and training transfer)	Readiness characteristic (training self-efficacy, learning goal, goal orientation, or motivation to learn) had the strongest impact on post-training outcomes
Yaacob et al., (2016)	Trainee readiness	Training effectiveness	There is a significant relationship between trainee readiness and the effectiveness of the entrepreneurship training programme
Ruona et al., (2002)	Utility reactions	Motivation to transfer learning	Participant reactions are more closely associated with ability and motivational factors
Buzrukova et al., (2012)	Trainee readiness (voluntary participation)	The perceived success of training	Most of the 63 studies examining diversity training programmes that operated on a voluntary basis reported that voluntary attendance was positively associated with the perceived success of diversity training.
Lim (2000)	Expected utility of training content	Transfer learning	The more the training satisfies the individual participant-level cross-cultural training needs, the better the chances of the training transfer are.
Al-Mughairi, (2018)	Trainee readiness	Training outcomes (expectation for utility reaction and expectation for performance improvement)	Trainee readiness had a significant positive relationship with expectations for the training outcomes.

6.4.2.3 Trainee readiness and expectations of the training environment

H2b: Trainee readiness has a significant positive relationship with expectations of the training environment

The findings of this study reject the hypothesis that trainee readiness has a significant influence on expectations about the training environment (H2b, $\beta = -0.163$, $p < 0.01$, $t = 3.065$). This finding is contrary to research by Machin (2002) who supports maximising trainee readiness prior to training and Tannenbaum et al. (1993) who found that trainee readiness significantly influences training and job-related outcomes. Furthermore, Hicks and Klimoski (1987), Tannenbaum et al., (1991), Holton et al. (2000), and Kirwan and Birchall (2006) found that trainee readiness has a positive influence on one's motivation to learn as depicted in Table 6.5. Hicks and Klimoski (1987) suggested that employees who attend a training programme because they want to, not because of external pressures, should profit more from the experience. Tannenbaum et al., (1993) suggested that trainee degree of choice may influence training motivation. Holton et al., (2000) proposed that trainee readiness contributes directly to motivation to transfer learning. Kirwan and Birchall (2006) found that the links between motivation to transfer and learner readiness. More specifically, Facteau et al., (1995) found that compliance training influences negatively the trainee's motivation to learn, while Orpen (1991) found that environmental variables, such as training resources, were significantly associated with trainee motivation and perceived training quality. Alvarez et al., (2004) also found that learning principles such as practice, part- versus whole-task learning, and feedback influenced the transfer of knowledge. This contrary finding is justified by the probability that each individual will enter training with different goals, expectations, needs, desire, and attitudes toward training (Tannenbaum, et al., 1991; Baldwin et al., 2009) as depicted in Table 6.5. The amount of variance in training outcomes is affected by trainee characteristics (van der Klink et al., 2001); therefore, trainees' expectations for training will not be similar. Thus trainee readiness will not always support expectations about the training environment as this study revealed.

Table 6.5 A summary of relevant research on training characteristics and training expectations relationships: trainee readiness and expectations of the training environment

Researchers	**Independent variable**	**Dependent variable**	**Major Findings**
Tannenbaum et al., (1993)	Trainee readiness (trainee degree of choice)	Training outcomes (reaction, learning, behaviour)	Trainee readiness was positively related to training outcomes and job-related outcomes.
Hicks and Klimoski (1987)	Trainee readiness (degree of choice)	Learning	Participants who had a high degree of choice received higher achievement test scores and reported that they learnt more from the training than those who had a low degree of choice.
Tannenbaum et al., (1991)	Fulfilling trainees' expectations and desires	Post-training attitudes (commitment, self-efficacy, and motivation)	Training fulfilment was positively related to post-training organisational commitment, physical self-efficacy, academic self-efficacy, and training motivation.
Holton et al., (2000)	Trainee readiness	Motivation to transfer learning	Trainee readiness was correlated with motivation to transfer learning.
Kirwan and Birchall (2006)	Learner readiness	Motivation to transfer learning	Learner readiness and motivation to transfer were highly correlated.
Facteau et al., (1995)	Compliance	Motivation to learn	Compliance and motivation to learn were negatively associated

Orpen (1991)	Training resources	Trainee motivation	Training resources were significantly correlated with trainee motivation and perceptions of training quality.
		Perceptions of training quality	
Alvarez et al., (2004)	Learning principles	Training performance	Learning principles such as practice, part- versus whole-task learning, and feedback were positively related to training performance.
Al-Mughairi, (2018)	Trainee readiness	Expectations of the training environment	Trainee readiness an insignificant relationship with expectations about the training environment.

6.4.2.4 The relationship between trainee readiness and expectations of trainer performance and behaviour

H2c: Trainee readiness has a significant positive relationship with expectations of trainer performance and behaviour.

As discussed in Chapter 2, section 2.10, literature and previous empirical studies have found that trainee readiness is an important factor in determining expectations. This study proposed that trainee readiness has a significant influence on expectations of trainer performance and behaviour. The results showed that trainee readiness had an insignificant impact on expectations of trainer performance and behaviour (H2c, β = -0.169, p = 0.001, t = -3.344). The findings in this study contradict previous findings by Machin (2002) who supports enhancing individual readiness prior to the beginning of training. Furthermore, Baldwin et al. (1991), Holton (1996), Hicks and Klimoski (1987), and Tannenbaum et al., (1991) have all found that trainee readiness is a useful predictor for motivation to learn as shown in Table 6.6. Kirwan and Birchall (2006) have shown the positive influence of trainee readiness on motivation to learn, while Tannenbaum et al., (1993) support the critical influence of trainee readiness on training, as well as job-related outcomes. Moreover, learner readiness has a direct impact on the knowledge acquired during training, as argued by Khan and Mirz (2016). Colquitt et al. (2000) found that pre-training motivation to learn positively affects trainee reaction and learning outcomes, while Bhatti et al. (2013), Payne et al. (2008) and Kirwan and Birchall (2006) have found that trainee readiness is positively related to training transfer mediated by transfer motivation. However, Ruona et al. (2002) showed an insignificant relationship between learner readiness and transfer of learning. This is perhaps because individuals have different expectations, desires and goals regarding training; therefore, cognition may play a critical role in determining training effectiveness, as argued by Baldwin et al. (2009), Tannenbaum et al. (1991), and Tracey and Tews (1995). Finally, trainee characteristics play a critical role in the amount of variance in training outcomes (van der Klink et al., 2001), which will affect their expectations surrounding training. Therefore, trainee readiness will not always support their expectations about a trainer's performance and behaviour, which is consistent with the results of this study. Table 6.6 summarises the findings of relevant research on the relationship between trainee readiness and expectations of training characteristics.

Table 6.6 A summary of relevant research on training characteristics and training expectations relationships: trainee readiness and expectations for training characteristics

Researchers	Independent variable	Dependent variable	Major Finding/Conclusion
Machin (2002)	Trainee readiness (participation in decision-making)	Trainees' motivation to learn	Participation in decision-making improved trainees' motivation to learn.
Baldwin et al., (1991)	Trainee readiness (a choice of training)	Motivation to learn/ Learning	Those trainees given the choice of training did have greater motivation to learn, provided they were ultimately given the training of their choice. Trainees who received their choice had a higher level of motivation to learn prior to entering the training session than those who were not provided a choice or who made a choice which they did not receive
Holton (1996)	Trainee readiness	Motivation to learn	It is likely that motivation to learn will vary by trainees' readiness for the intervention
Hicks and Klimoski (1987)	Prior information individuals receive	Trainees' commitment to their decisions to attend, the perceived appropriateness of and satisfaction with the training, and their motivation to learn	Trainees who had a high degree of choice were more satisfied than those who received the low-choice.
Tannenbaum et al. (1991)	Fulfilling trainees' expectations and desires	Post-training attitudes (commitment, self-efficacy, and motivation)	Training fulfilment was positively related to post-training organisational commitment, physical self-efficacy, academic self-efficacy, and training motivation
Holton et al. (2000)	Trainee readiness	Motivation to transfer learning	Trainee readiness was correlated with motivation to transfer learning
Kirwan and Birchall (2006)	Learner readiness	Motivation to transfer learning	Learner readiness and motivation to transfer were highly correlated
Khan and Mirz (2016)	Expectations from training	Knowledge acquired during training	A positive relationship exists between expectations from training and knowledge acquired during training
Colquitt et al. ,(2000)	Motivation to learn	Reaction and learning	Motivation to learn was positively related to learning outcomes.
Al-Mughairi, (2018)	Trainee readiness	Expectations of trainer performance and behaviour	Trainee readiness had an insignificant relationship with expectations of trainer performance and behaviour.

Overall, Table 6.7 presents a summary of finding of Survey 1 (before training) of this study. The following section discusses the results of Survey 2 (immediately after completed training).

Table 6.7 A summary of finding of survey 1 (before training) on relationships between training characteristics and training expectations.

Researcher	Independent variable	Dependent variable	Major Finding

Al-Mughairi, (2018)	Pre-training activities and activities	Expectations for the training outcomes	Pre-training interventions and activities had an insignificant relationship with expectations for training outcomes.
		Expectations of the training environment	Pre-training interventions and activities had a significant positive relationship with the trainees' expectations of the training environment.
		Expectations of trainer performance and behaviour	Pre-training interventions and activities had a significant positive relationship with expectations of trainer performance and behaviour.
	Trainee readiness	Training outcomes (expectation for utility reaction and expectation for performance improvement)	Trainee readiness had a significant positive relationship with expectations for training outcomes.
		Expectations of the training environment	Trainee readiness had an insignificant relationship with the training environment.
		Expectations of trainer performance and behaviour	Trainee readiness had an insignificant relationship with expectations of trainer performance and behaviour.

6.5 Discussion on the results of Survey 2

Following the theoretical foundation presented in Chapters 2, section 2.10 and Chapter 3, section 3.7, this research divides training outcomes in to three categories: (1) reactions, (2) learning, and (3) intention to transfer learning. It also divides training characteristics into three categories: (1) training environment, (2) training methods, and (3) trainer performance and behaviour.

The final revised model of Survey 2 comprises six constructs and 17 relationships, as depicted in Figure 5.10 and Table 6.1. A list of the hypotheses tested by of Survey 2 is given below. These findings show that learning is affected by reaction; see Table 6.8 and Table 6.24. In turn, learning is not influenced by intention to transfer learning, but it is influenced by the training environment, and trainer performance and behaviour; see Table 6.9, Table 6.13, Table 6.15 and Table 6.24. In addition, the results show no significant impact of the training environment on reaction and intention to transfer learning, in addition to no direct impact of training methods on both reaction, learning, and intention to transfer learning; see Table 6.10, Table 6.19, Table 6.11, Table 6.14 and Table 6.24. Further, intention to transfer learning is not affected by trainer performance and behaviour; see Table 6.21and Table 6.24. Training environment, training methods and trainer performance and behaviour did moderate the relationships between reaction and learning or between learning and intention to transfer learning; see Table 6.16-6.18, Table 6.21-Table 6.24.

H3: Reaction has a significant positive relationship with learning. (Accepted)

H4: Learning has a significant positive relationship with intention to transfer learning. (Rejected)

H5a: The training environment has a significant positive relationship with reaction. (Rejected)

H5b: The training environment has a significant positive relationship with learning. (Accepted)

H5c: The training environment has a significant positive relationship with intention to transfer learning. (Rejected)

H6a: Training methods have a significant positive relationship with reaction. (Rejected)

H6b: Training methods have a significant positive relationship with learning. (Rejected)

H6c: Training methods have a significant positive relationship with intention to transfer learning. (Rejected)

H7a: Trainer performance and behaviour have a significant positive relationship with reaction. (Accepted)

H7b: Trainer performance and behaviour have a significant positive relationship with learning. (Accepted)

H7c: Trainer performance and behaviour have a significant positive relationship with intention to transfer learning. (Rejected)

H5d: The training environment moderates the relationship between reaction and learning. (Rejected)

H5e: The training environment moderates the relationship between learning and intention to transfer learning. (Rejected)

H6d Training methods moderate the relationship between reaction and learning. (Rejected)

H6e Training methods moderate the relationship between learning and intention to transfer learning. (Rejected)

H7d Trainer performance and behaviour moderate the relationship between reaction and learning. (Rejected)

H7e Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning. (Rejected)

6.5.1 Relationship between reaction and learning

H3: Reaction has a significant positive relationship with learning.

Kirkpatrick uses four interrelated levels—reaction, learning, behaviour and results—to assess training success; the evaluation of the four Kirkpatrick training outcomes should be ongoing from the initiation of any training (Hung, 2010; Kirkpatrick, 1996; Santos et al., 2003; Wang et al., 2002). This study proposes that reaction has an impact on learning. The results of Survey 2 support and confirm this hypothesis (H3, $\beta = 0.165$, $p < 0.01$, $t = 2.643$). In fact, the results of this study support one of the basic assumptions of the positive relationship between reaction and learning (Kirkpatrick, 1996) and are consistent with studies by Homklin et al., (2013), Leach and Liu (2003), Warr et al., (1999), Tan et al., (2003), Liebermann and Hoffmann, (2008) and Lin et al., (2011) as shown in Table 6.8. The four levels of Kirkpatrick's model represent a causal chain such that positive reactions lead to greater learning, which produces greater transfer and subsequently more positive organizational results (Bates, 2004). However, the findings oppose those of Alliger and Janak (1989), Alliger et al. (1997), Arthur et al., (2003a), Colquitt et al., (2000), Kaplan and Pascoe (1977) and Noe and Schmitt (1986) who found no relationships between level 1 (reaction) and the other remaining levels (learning, behaviour and results). This is expected, as Clement (1982) argues that other variables may influence the relationships between the four training outcomes, such as motivation, context of transfer and trainee attitudes. Also, Alliger et al., (1997) suggested that reactions that appeared to have both affective and utility characteristics are highly correlated with learning, rather than affective reactions alone. Further, there is very little reason to believe that how trainees feel about or whether they like a training programme tells researchers much, if anything, about how much they learned from the programme (learning criteria) as argued by Arthur et al., (2003a). Thus, trainee learning will be supported positively by trainee reaction, as the results of this study revealed. These findings confirm that trainee learning will be supported positively by trainee reaction.

Table 6.8 A summary of relevant research on the relationships between training outcomes: trainee reaction and trainee learning.

Researchers	Independent variable	Dependent variable	Major Findings
Homklin et al., (2013)	Trainee reaction	Learning	Trainee reaction was positively related to learning.
Leach and Liu (2003)	Trainee reaction	Learning	A relationship between reaction and knowledge retention is confirmed (Level 1 → 2).
Warr et al., (1999)	Reaction	Learning	Differentiated measures of reaction were all linked to learning outcomes.
Tan et al., (2003)	Reaction	Learning	Cognitive employee reactions are related employee learning. Negative affective reactions significantly predict employee learning.
Liebermann and Hoffmann (2008)	Reaction	Learning	The trainee is more likely to learn training content if she/he is satisfied with the training programme.
Lin et al., (2011)	Reaction	Learning	Employees' training learning is affected by training reactions.
Alliger and Janak (1989) Alliger et al. (1997)	Reaction	Learning	Utility reactions were not significantly correlated with measures of immediate or retained learning.
Arthur et al., (2003a)	Reaction	Learning	The relationship between the student ratings and learning was small.
Colquitt et al., (2000)	Reaction	Learning	The correlation between reaction and learning is low.
Kaplan and Pascoe (1977)	Reaction	Learning	There was an insignificant relationship between humorous lectures and learning There was an insignificant relationship between the use of humorous examples and immediate comprehension.
Noe and Schmitt (1986)	Reaction to training	Learning	The link between reaction to training and learning was insignificant.

Al-Mughairi, (2018)	Reaction	Learning	Reaction had a significant positive relationship with learning.

6.5.2 Relationship between learning and intention to transfer learning

H4: Learning has a significant positive relationship with intention to transfer learning.

Intention to transfer learning to job tasks is considered an outcome of training (Hutchins et al., 2013; Yamkovenko and Holton, 2010). The intention to implement training or to change behaviour or to transfer learning is defined as the participant's intention (or desire) and purposeful aim to use what was learned in the training programme in order to apply the training to their daily work tasks (Ajzen, 1991; Bansal and Thakur, 2013; Machin and Fogarty, 2003; 2004). As discussed in Chapter 2, section 2.8, the transfer of learning is described in this study as behaviour or a change in behaviour.

The proposed model of Survey 2 hypothesised that learning will have a significant positive relationship with intention to transfer learning. The parameters estimated the results ($\beta = 0.010$, t-value = 0.062, p = 0.884) of the hypothesis H4 (L $\rightarrow$ ITL), which were found to be statistically insignificant. Therefore this hypothesis was not supported by the data. The hypothesis was drawn from Elangovan and Karakowsky (1999), Cheng and Ho (1998), and Holton and Baldwin (2003) who found a clear relationship between expectations and training outcomes, as did other studies regarding the impact of learning on behaviour (Baldwin and Ford, 1988; Homklin et al., 2014; Lim and Johnson, 2002; Liebermann and Hoffmann, 2008; Velada et al., 2007) as depicted in Table 6.9. Baldwin and Ford, (1988) proposed that training outcomes of learning and retention are having direct effects on conditions of transfer. Homklin et al., (2014) found that knowledge from training has a positive relationship with transfer of training. Lim and Johnson, (2002) showed that a high perceived degree of learning was typically associated with a high perceived degree of transfer and low perceived learning was related to low perceived transfer. Liebermann and Hoffmann (2008) found that the more the trainee has learnt about job requirements, the more likely he/she is to apply the trained skills. Velada et al., (2007) showed that when trainees believe in their capabilities to transfer learning and when they retain training content, they are more likely to perceive that they have transferred the training to the work context.

Although these studies empirically confirmed a significant relationship between the trainees' expectations of training and training outcomes, and between learning and behaviour, the results of this study suggested that learning does not significantly influence the intention to transfer learning as shown in Table 6.9 and Table 6.24. This finding is consistent with research by Colquitt et al. (2000), which showed that learning was not a significant predictor of transfer of learning, and Machin and Fogarty (2003) who found an insignificant relationship between learning and the intention to implement learning. Machin and Fogarty (2003) argued that perceived success in learning is no guarantee that a learner will have intentions to apply their learned skills and knowledge. If a trainee has no intention to transfer their knowledge to their daily life, then this transfer will not occur (Machin and Fogarty, 2003). According to Kirkpatrick and Kirkpatrick (2006), reactions are insufficient for assessing training; hence conducting other training evaluation levels is required to accomplish the aim of training evaluation.

There may be several reasons for the inconsistent results between learning and intention to transfer learning. First, if the pre-training intervention and activities are provided for trainees beforehand or if they are ready before training, this may influence their intention to transfer learning. Baldwin et al., (1991) found that trainees report greater intention to use their training when they receive relevant information before a training programme begins. Trainee readiness is significantly related to intention to transfer learning as shown by Bates et al., (2012) and Hutchins et al., (2013). Also, it should be noted that previous studies on the oil and gas industry have reported a high turnover rate and shortage of qualified employees (Al-Harthy, 2007; Al-Emadi and Marquardt, 2007; Poruban, 2001). This human capital problem could negatively influence employees' intentions to change their behaviours after gaining skills and knowledge from a training programme.

Another reason for the insignificant relationship between learning and intention to transfer learning in this study is that trainers or supervisors may not attempt to support trainees' intention to transfer learning by giving them more orientation of training objectives. According to Tannenbaum et al., (1991) trainers should attempt to identify trainees' expectations and desires, while staying as flexible as possible to meeting those needs. Also, Mesmer-Magnus and Viswesvaran (2010) found that trainees provided with a pre-training goal orientation perform better on indicators of cognitive skill-based and affective learning compared to trainees who are not provided with a pre-training goal. Hence, trainees not given an orientation of training objectives or what is going to be involved in the training content may not have an intention to transfer learning. Schraeder (2009) stressed that if trainees are viewed as customers and steps are taken to increase their training experience by meeting and even surpassing their expectations, then the effectiveness of the training may increase. Finally, the low involvement of trainees in the training needs assessment may also contribute to low intention to transfer learning. According to Odiorne and Rummler (1988), inappropriate identification of training needs negatively affects the design of the training programme, which leads to dissatisfaction among the participants. Similarly, Vermeulen (2002), Holton and Baldwin (2003), and Elangovan and Karakowsky (1999) proposed that training should match the training needs of the workplace. Therefore, it can be reasonably concluded that trainee learning will not always support trainee' intention to transfer learning, as results of this study revealed.

Table 6.9 A summary of relevant research on the relationship between learning and intention to transfer learning

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Elangovan and Karakowsky (1999)	Motivation to transfer training	Outcome expectancies	Organisations should explicitly link performance to rewards and emphasise the value of training for improving performance. This will have a positive influence on the trainee's motivation to transfer.
Cheng and Ho (1998)	Perception of training value Training motivation	Transfer of training	Transfer outcome was significantly related to training value and training motivation.
Holton and Baldwin (2003)	16 transfer of learning Factors(performance self-efficacy, learner readiness, motivation to transfer, transfer effort performance, performance outcomes, feedback, peer support, supervisor support, openness to change, personal outcomes–positive, personal outcomes–negative ,supervisor sanctions, content validity, transfer design, personal capacity for transfer, opportunity to use).		All factors of predicted transfer of learning except two scales (learner readiness and performance self-efficacy). These were significantly different across types of organisations Perceptions of transfer learning factors vary depending on the type of training. Participant perceptions of transfer systems differ because of situational variables (for example, organisational culture, organisational type, and training type) Transfer systems differ across organisational types, specific organisations, and training types
Baldwin and Ford (1988)	Learning and retention	Conditions of transfer (e.g. the generalisation of learnt material to the job and the maintenance of trained skills over a period on the job)	The samples, tasks, designs, and criteria used in the existing research limit even further the authors' ability to understand the transfer process.
Liebermann and Hoffmann (2008)	Learning	Transfer to their jobs	The more the trainee has learnt about job requirements, the more likely he/she is to apply the trained skills
Homklin et al., (2014)	Learning	Transfer of training	Knowledge retained from training had a positive relationship with training transfer
Lim and Johnson (2002)	Learning	Transfer of learning	A high perceived degree of learning was typically associated with a high perceived degree of transfer and low perceived learning was related to low perceived transfer.
Velada et al., (2007)	Learning and retaining the training content	Transfer of knowledge and/or skills	When trainees believe in their capabilities to transfer learning and when they retain training content, they are more likely to perceive that they have transferred the training to the work context.
Colquitt et al., (2000)	Declarative learning	Transfer of leaning	The relationship between declarative learning and transfer of learning was insignificant.
Machin and Fogarty (2003)	Learning during training	Transfer implementation intentions	Learning during training was not associated with transfer implementation intentions
Baldwin et al., (1991)	Trainee readiness (a choice of training)	Motivation to learn/learning	Those trainees with a choice of training did have greater motivation to learn, provided they were ultimately given the training of their choice. Trainees who received their choice had a higher level of motivation to learn prior to entering the training session than those who were not provided a choice or made a choice which they did not receive.
Bates et al., (2012)	Trainee readiness	Intention to	Trainee readiness and intention to transfer learning

		transfer learning	were correlated.
Hutchins et al., (2013)	Trainee readiness	Intention to transfer learning	Trainee readiness was positively correlated with intent to transfer.
Mesmer-Magnus and Viswesvaran (2010)	Goal orientation	Learning outcomes/ cognitive, skill, and affective learning	A pre-training goal orientation promotes cognitive skill-based and affective learning.
Al-Mughairi,(2018)	learning	Intention to transfer learning	Learning had an insignificant relationship with intention to transfer learning.

6.5.3 Training characteristics

The design of the training determines how the training programme will be organised and delivered (Kirkpatrick and Kirkpatrick, 2006; Noe, 2016). The delivery and implementation of a training programme ensures that all learning outcomes are applied and reinforced in practice within the training environment (Ahammad, 2013). Training characteristics refer to the training content, goals, methods, environment, and trainer performance and behaviour (Carliner, 2003; Gauld and Miller, 2004; Charney and Conway, 2005; Kirkpatrick and Kirkpatrick, 2006; Nikandrouet et al., 2009; Diamantidis and Chatzoglou, 2012). This study also focuses on the evaluating the effect of training content, training goals, training methods, training environment, and trainer performance and behaviour on training outcomes, namely reaction, learning, intention to transfer learning, behaviour and results.

In Survey (2), these features (e.g. training environment, training methods and trainer performance and behaviour) are intended to measure the training characteristics that lead to outcomes, i.e., reaction, learning and intention to transfer learning.

6.5.3.1 Training environment, methods, trainer performance and behaviour, and reaction

Training environment and reaction

H5a: The training environment has a significant positive relationship with reaction.

Trainee reaction measures trainee satisfaction, enjoyment, difficulties, the quality of training, and the efficiency and usefulness of the training. Warr and Bunce (1995), Kirkpatrick (1996), Giangreco et al., (2010), North et al., (2000), and Towler and Dipboye (2001) suggest that training characteristics have an impact on trainee reactions to training. The training environment is a location that supports trainees in their learning (Harris and Tessmer, 1992). The training environment includes the suitability of the physical facilities, equipment, accommodation, classrooms, etc. (Iqbal et al., 2011). This study proposes that the training environment has a positive influence on trainee reactions; however, the findings of this study reject the hypothesis that the training environment has a positive influence on reaction (H5a, $\beta = 0.032$, $p = 0.625$, $t = 0.488$). This result is inconsistent with research by Basarab Sr. and Root (1992), Iqbal et al., (2011), Franceschini and Terzago (1998), and Storr and Hurst (2001) who found a positive relationship between a positive training environment and trainee satisfaction as displayed in Table 6.10. The evaluation offers information for designers and developers to ensure that programme provides a positive training environment for participants (Basarab Sr. and Root, 1992). Franceschini and Terzago (1998) suggested that the training environment is one of the requirements for developing industrial training which increases the level of satisfaction for the participants. Storr and Hurst (2001) suggested that appropriate facilities and resources, the learning space and complementary learning resources for training programmes are required to increase trainees' satisfaction. This finding is best understood by considering that the training environment involves venues, furniture and training facilities; therefore, insufficient and old-fashioned equipment does not attract the trainees' attention to learn and communicating content as indicated in Table 5.3. Concerning the availability of training facilities, most respondents (93.8%) responded positively to the use of an overhead projector and they responded positively (93.3%) to not availability of other training aids. The facilities required for training might vary from a small training area to a large one (Treven, 2003). Furthermore, Brown and McCracken (2009) suggested that unsuitable training locations constrained training effectiveness. Therefore, trainee reaction will not always be supported positively by the training environment as the results of this study revealed.

Table 6.10 A summary of relevant research on training characteristics and training outcomes relationships: training environment and trainee reaction

Researchers	Independent variable	Dependent variable	Major Findings
Basarab Sr. and Root (1992)	Training environment	Reaction	Training environment had a significant impact on reaction.
Iqbal et al., (2011)	Training environment	Reaction	Training environment had positive and indicative relationship with reaction.
Franceschini and Terzago (1998)	Training environment	Participants' satisfaction	The training environment is one of the requirements for developing industrial training which increases the level of satisfaction for the participants.
Storr and Hurst (2001)	Training environment	Trainee satisfaction	Appropriate facilities and resources, the learning space and complementary learning resources for training programmes are required to increase trainees' satisfaction.
Al-Mughairi,(2018)	Training environment	Reaction	The training environment had an insignificant relationship with reaction.

Training methods and reaction

H6a: Training methods have a significant positive relationship with learning.

Training methods include the training materials and instruments that the programme needs to succeed (Iqbal et al., 2011). The results do not confirm a relationship between training methods and reaction, and the results of this study reject the hypothesis that training methods have a positive influence on reaction (H4a, $\beta = 0.068$, $p = 0.303$, $t = 0.068$). The results differ from previous studies that have examined the direct impact of training methods on reaction (Basarab Sr and Root, 1992; Indira, 2008;

Iqbal et al., 2011) as shown in Table 6.11. However, there are factors that can explain these divergent findings. First, the use of training methods does not support trainee participation. Chen et al., (2007) posit that effective training programmes use training methods that can support trainee participation. The participants' levels of experience and the variance in their abilities may determine the techniques used in the course (Reid and Barrington, 2011). Another justification is the traditional training methods (e.g. class learning) were mostly used in training programmes and were rarely used to other training methods as shown in Table 5.3. In this study, the majority of respondents (93.8%) responded positively to lectures as these were mostly used in their training programmes, followed by case studies (51.2%), simulations (35.1%), workshops (28.4%), and other training methods (9.5%). This finding was supported by Atiyyah (1993) who found that training methods in Arab organisations were quite limited, and the most popular methods were class lectures followed by case studies, while group discussions, role playing, exercises, games and simulations were hardly used. These findings also support Albahussain (2000) who found that the most popular techniques applied by Arab organisations were case studies and lectures. Finally, this finding contradicts Bimbitsos and Petridou (2012), De Cenzo et al., (2015), and Yaghi (2008) who stressed that the basic factors that should be taken into consideration when designing any training programme is the use of media aids. Lucas (2005) argued that managers and employees prefer not to use new procedures or work methods to perform their tasks because they perceive the adoption of a new approach to be risky and problematic. Therefore, training methods will not always positively support trainee reaction, as revealed in this study.

Table 6.11 A summary of relevant research on training characteristics and training outcomes relationships: training methods and trainee reaction

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Basarab Sr and Root (1992)	Training methods	Reaction	Training methods had a significant impact on reaction.
Indira (2008)	Training methods	Reaction	Over 55% of the respondents observed that overall the training methods were innovative and effective.
Iqbal et al., (2011)	Training methods	Reaction	Training methods had a positive and indicative relationship with reaction.
Atiyyah (1993)	Training methods		The most popular methods were class lectures followed by case studies.
Albahussain (2000)	Training methods		The most commonly used training method for employees were demonstration, case study, group discussion and lectures.
Al-Mughairi, (2018)	Training methods	Reaction	Training methods have an insignificant relationship with learning.

Trainer performance and behaviour, and reaction

H7a: Trainer performance and behaviour have a significant positive relationship with reaction.

The trainer is defined as the person who is responsible for conveying the training objectives and plays an important role in achieving efficacy within the training programme (Latif, 2012). Brown and McCracken (2009) found that a trainer plays an important role in inspiring trainees to learn effectively. This study hypothesised that trainer performance and behaviour would have a significant impact on reaction. The findings of this study confirmed that trainer performance and behaviour have a positive impact on reaction (H7a, $\beta = 0.137$, $p < 0.05$, $t = 1.995$). This factor was the strongest factor supporting reaction with a path coefficient of 0.137. This finding is consistent with studies by Basarab Sr. and Root (1992), Indira (2008), Iqbal et al., (2011), and Ghosh et al., (2011, 2012) who found a positive relationship between trainer performance and behaviour, and reaction as shown in Table 6.12. As Morris (1984) argues, positive trainer action results in better evaluations for the training programme, even if the programme is less useful or mismanaged. The level of trainee satisfaction is greater when trainer performance and behaviour are higher, and trainees are more likely to recommend the trainer to be reliable and effective (Nikandrou et al., 2009). Therefore, trainer performance and behaviour will support positively trainee reaction which is consistent with the results of this study. This study supports the important role that trainer performance and behaviour play in accomplishing training outcomes.

Table 6.12 A summary of relevant research on training characteristics and training outcomes relationships: Trainer performance and behaviour, and trainee reaction

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Basarab Sr. and Root (1992)	Trainer	Reaction	Trainer performance had a significant impact on reaction
Indira (2008)	Trainer	Reaction	Over 55% of the respondents observed that overall the teaching style and delivery was innovative and effective
Iqbal et al., (2011)	Trainer performance and behaviour	Reaction	Trainer performance and behaviour had a positive and indicative relationship with reaction
Ghosh et al.,(2011)	Trainer performance and behaviour	Reaction	The communication of the trainer and clarity of the trainer had significant impact on trainee satisfaction There was a significant difference in the mean values of satisfaction among managers and non-managers in only one aspect: communication of the trainer (comprised of variables, namely instructions for class exercise, clarity in responding to questions, ability to keep the sessions lively and interesting, and level of time given for activities).
Ghosh et al., (2012)	Trainer performance and behaviour	Reaction	The instructor's comfort level with the subject matter and rapport with trainees are significant predictors of trainee satisfaction.
Al-Mughairi, (2018)	Trainer performance and behaviour	Reaction	Trainer performance and behaviour had a significant positive relationship with reaction.

6.5.3.2 Environment, methods, performance and learning

Training environment and learning

H5b: The training environment has a significant positive relationship with learning.

According to Facteau et al. (1995) and Charney and Conway (2005), the training environment's role is critical in terms of the emphasis and usefulness of the training programme and learning gained. This study proposed that the training environment would have a direct positive impact on learning, and the findings revealed this hypothesis to be correct. The results of this research found that the training environment was related to learning outcomes and indicated a t-value of 2.391 and a p-value of 0.017, thus supporting the hypothesis (H5b). This factor most strongly supported learning with a path coefficient of 0.148, and was consistent with Iqbal et al., (2011) who investigated this relationship. However, this finding is not consistent with that of Diamantidis and Chatzoglou (2012) who found that the training environment had an insignificant influence on learning as shown in Table in 6.13. Training environment will support positively trainee learning, which is consistent with the results of this study. This study supports the significant role of the training environment in supporting trainees to acquire knowledge and skills.

Table 6.13 A summary of relevant research on training characteristics and training outcomes relationships: Training environment and trainee learning

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Iqbal et al., (2011)	Training environment	Learning	Training environment had positive and indicative relationship with reaction.
Diamantidis and Chatzoglou (2012)	Training environment	Learning	The training environment had a insignificant impact on learning.
Al-Mughairi, (2018)	Training environment	Learning	The training environment had a significant positive relationship with learning.

Training methods and learning

H6b: Training methods have a significant positive relationship with learning.

The findings of this study do not support the hypothesis that training methods have a positive influence on learning (H6b, $\beta = 0.002$, $p = 0.968$, $t = 0.040$). Therefore, the results of this study are inconsistent with previous studies by Arthur et al. (2003b), Burke et al., (2006) and Iqbal et al., (2011). Moreover, with studies that examined specific or variety of delivery training methods on trainee learning. For example Nikandrou et al., (2009) who investigate the impact of training design based on project methods on learning and transfer of learning. Also, Ratcliff-Daffron and Wehby-North, (2006) who examine the impact of variety of delivery methods on learning and transfer of learning as depicted in Table 6.14. However, the results support research by Al-Athari (2000) who found that training methods used by Arab organisations failed to support trainees in the learning process. This may be due to the fact that the selected training methods do not match the needs or aims of the organisation, and that the materials and equipment do not meet the participants' background, skills and abilities (Axtell et al., 1997; Hutchins, 2009; Yamnill and McLean, 2005; Younes, 2013). Axtell et al. (1997), Yamnill and McLean (2005), and Hutchins (2009) suggest that if the training content and materials are similar to the needs of the organisation, then the participants may improve their skills and knowledge, and their understanding of the training material will be significant. Acton and Golden (2003) argue that certain methods may be more useful for some organisations and less useful for others. According to Lau (2010), the aim of using various training methods is to gain better results and outcomes from the training. It is also possible that there is no such thing as a prefect training method. Arthur et al., (2003b) argue that no single method is better than another; therefore, no method is more effective than another for delivering training. Moreover, the instructor may not be familiar with new methods or the trainees may not believe that new methods have value; therefore, the training methods are seen as time consuming and a waste of money. Lucas (2005) revealed that workers usually prefer to complete their duties using traditional procedures and methods, and perceive new approaches to be risky and problematic. Furthermore, unqualified and unskilled instructors tend to use traditional methods, such as lectures, because they lack experience with advanced training methods (Agnaia, 1997). Therefore, training methods will not always support positively trainee learning as the results of this study revealed.

Table 6.14 A summary of relevant research on training characteristics and training outcomes relationships: Training methods and trainee learning

Researchers	Independent variable Learning	Dependent variable Intention to transfer learning	Major Findings/Conclusion
Arthur et al., (2003b)	Training methods	Learning	The effectiveness of training appears to vary as a function of the specified training delivery method, the skill or task being trained, and the criterion used to operationalize effectiveness.
Burke et al., (2006)	Training methods	Learning	The more engaging a method of training is, the greater the effects of safety and health training on knowledge acquisition.
Iqbal et al., (2011).	Training methods	Learning	The training methods had a significant impact on learning.
Nikandrou et al., (2009)	Training method (project method)	Learning	Training method (project method) had a significant impact on learning and transfer of learning.
Ratcliff-Daffron and Wehby-North (2006)	Variety of delivery methods	Learning	Use of variety of delivery training methods influence strongly learning and successful transfer of learning.
Al-Athari (2000)	Training method	Learning process	Training methods used by Arab organisations failed to support trainees in the learning process.
Al-Mughairi, (2018)	Training methods	Learning	Training methods had an insignificant relationship with learning.

Trainer performance and behaviour, and learning

H7b: Trainer performance and behaviour have a significant positive relationship with learning.

The findings of this study confirm the hypothesis that trainer performance and behaviour have a significant positive influence on learning (H7b, $\beta = 0.129$, $p < 0.05$, $t = 2.026$). This finding is consistent with studies by Iqbal et al., (2011) who showed that trainer performance and behaviour had a positive impact on learning, but is inconsistent with Diamantidis and Chatzoglou (2012) who found an insignificant relationship between trainer performance and behaviour, and learning as shown in Table 6.15. They explained that a consistent trainer who displays appropriate behaviour during the implementation of the programme may increase the impact of training, hence trainees' knowledge and abilities will be improved and they will understand the usefulness of the training in performing their daily work tasks. In other words, if the trainer's performance and behaviour are sufficient, trainees will acquire more knowledge and skills. Thus, the greater the trainer performance and behaviour are, the greater the level of trainee learning will be, which is consistent with the results of this study. This study supports the important role that trainer performance and behaviour play in trainees to acquire knowledge and skills

Table 6.15 A summary of relevant research on training characteristics and training outcomes relationships: Trainer performance and behaviour and trainee learning

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/Conclusion**
Iqbal et al., (2011)	Trainer performance and behaviour	Learning	The trainer had significant impact on learning.
Diamantidis and Chatzoglou (2012)	Trainer performance and behaviour	Learning	The trainer's performance had an insignificant impact on learning.
Al-Mughairi, (2018)	Trainer performance and behaviour	Learning	Trainer performance and behaviour have a significant positive relationship with learning.

6.5.4 Training environment, training methods and trainer performance and behaviour moderate the relationship between reaction and learning

A key objective of this research is to investigate whether or not the training environment, training methods, and trainer performance and behaviour have any moderating effect on the relationship between reaction and learning. To achieve this objective, three different hypotheses were proposed, as shown in Table 6.1 and as summarised below.

H5d: The training environment moderates the relationship between reaction and learning.
H6d: Training methods moderates the relationship between reaction and learning.
H7d: Trainer performance and behaviour moderate the relationship between reaction and learning.

6.5.4.1 The training environment moderates the relationship between reaction and learning

H5d: The training environment moderates the relationship between reaction and learning.

The results reveal that the training environment does not have a significant moderating effect on the relationship between reaction and learning. There was no significant moderating impact between interaction of the training environment with reaction and learning (β = 0.001, p = 0.980), as indicated in Table 5.19 and Table 6.1. Thus, the hypothesis that the training environment would function as a moderator between reaction and learning was not supported. This finding is contrary to the results found in the literature review, which lent support to this hypothesis (Bate, 2007; Homkin et al., 2013). The insignificant moderating effect of the training environment on the relationship between reaction and learning may be due to the insignificant direct effect of the training environment on reaction. According to Hung (2010) and Kirkpatrick (1996), trainees with positive reactions were more likely to say that the suitability training environment influenced their learning performance. Charney and Conway (2005) recommend setting up a training environment that is similar to the workplace to motivate participants to acquire knowledge and skills and to enhance the usefulness of the training programme. Notwithstanding the insignificance of the moderating effect of the training environment, this finding is not consistent with Iqbal et al., (2011) who investigated the significant mediating effect of the training environment on the relationship between reaction and learning as depicted in Table 6.16. Thus, the training environment will not always moderate relationship between reaction and learning, as revealed in this study.

Table 6.16 A summary of relevant research on training characteristics and training outcomes relationships: The training environment moderates the relationship between reaction and learning

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Iqbal et al., (2011)	Reaction	The relationship between training environment and learning	The relationships between training environment and learning were significantly mediated by reaction.
Al-Mughairi, (2018)	Training environment	The relationship between reaction and learning.	The training environment did not moderate the relationship between reaction and learning.

6.5.4 .2 Training methods moderate the relationship between reaction and learning

H6d: Training methods moderate the relationship between reaction and learning.

The findings of this study do not support the hypothesis that training methods moderate the relationship between reaction and learning. As shown in Table 5.19 and Table 6.1, the method of training was not significantly correlated with reaction. The study also found that the standardised estimate (β = 0.023) was weak, and its corresponding p-value = 0.639 showed that there was no significant moderating impact between training methods, and reaction and learning (p = 0.059), as depicted in Table 5.19 and 6.1. Thus, hypothesis H6d was rejected. Contrary to H6d, the training method had no significant moderating effect on the relationship between reaction and learning. It is expected that trainees with positive reactions would be more likely influenced by the use of suitable training methods. However, the data indicated that the training methods had an insignificant impact on reaction. Furthermore, training methods had an insignificant effect on learning. Perhaps the training methods were not sufficiently enjoyable or interesting, or perhaps the methods were unsuitable for the training programme. Another possible explanation is the false discussion regarding selection of training methods by training institutions and instructors or trainers before trainees attend training. This prevents participants from expressing their needs regarding the methods used in the training programme. A good training needs assessment should highlight the issues that must be addressed during the training (van Eerde et al., 2008) for all stakeholders in the training. However, the findings are contrary with Iqbal et al. (2011) who found that training methods had a significant meditating effect on the relationship between reaction and learning as shown in Table 6.17. Thus, the training methods will not always moderate the relationship between reaction and learning as revealed in this study.

Table 6.17 A summary of relevant research on training characteristics and training outcomes relationships: The training methods moderate the relationship between reaction and learning

Researchers	Independent variable	Dependent variable	Major Findings/conclusion
Iqbal et al., (2011)	Reaction	The relationship between Training methods and learning.	The relationship between training methods and learning were significantly mediated by reaction.
Al-Mughairi, (2018)	Training methods	The relationship between reaction and learning.	Training methods did not moderate the relationship between reaction and learning.

6.5.4.3 Trainer performance and behaviour moderate the relationship between reaction and learning

H7d: Trainer performance and behaviour moderate relationship between reaction and learning.

Trainer performance and behaviour was hypothesised to moderate the relationship between reaction and learning. This was drawn from Charney and Conway (2005) and Lawson (2006) who suggested the positive impact of trainer performance and behaviour on learning. Alliger et al. (1997), Mathieu et al., (1992), Warr et al., (1999), Leach and Liu (2003), Tan et al., (2003), Lin et al., (2011), and Homklin et al., (2013) found a positive significant relationship between reaction and learning, and as depicted in Table 6.7. This research rejected the hypothesis that trainer performance and behaviour moderated the relationship between reaction and learning. There was no significant moderating impact between the interaction of trainer performance and behaviour with reaction on learning (β = -0.009, p = 0.858), as shown in Table 5.19 and Table 6.1. The inconsistency of these results could be due to the fact that other factors (e.g., individual and environment factors) and other training characteristics (e.g., training content and training objectives) can moderate the strength of the relationship between reaction and learning. Moreover, the finding of this study is inconsistent with findings by Iqbal et al., (2011) who found that trainer performance and behaviour had a significant meditating effect on the connection between reaction and learning as depicted in Table 6.18. Thus, trainer performance and behaviour will not always moderate the relationship between reaction and learning as revealed in this study.

Table 6.18 A summary of relevant research on training characteristics and training outcomes relationships: The trainer performance and behaviour moderates the relationship between reaction and learning.

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/Conclusion**
Iqbal et al., (2011)	Reaction	The relationship between trainer and learning	The relationship between trainer and learning were significantly mediated by reaction.
Al-Mughairi, (2018)	Trainer performance and behaviour	The relationship between reaction and learning.	Trainer performance and behaviour did not moderate relationship between reaction and learning.

6.5.5 Training environment, methods, trainer performance and behaviour, and intention to transfer learning

6.5.5.1 Training environment and intention to transfer learning

H5c: Training environment has a significant positive relationship with intention to transfer learning.

This study hypothesised that the training environment would have a positive influence on intention to transfer learning; however, the findings of this study reject this hypothesis (H5c, β = -0.025, p =0.719, t = -0.360). This result is inconsistent with Machin and Fogarty (2003) who found that activities that enhance the transfer of learning to daily work tasks (including over-learning, fidelity, stimulus variability, principles- meaningfulness, self-management activities, relapse prevention, and goal setting) were positively significantly related with intention to transfer learning to the workplace. However, their finding is not confirmed by Diamantidis and Chatzoglou (2012) who found that the training environment had an insignificant influence on the usefulness of training as shown in Table 6.19. The most likely explanation for the inconsistency of these results is the use of inappropriate media (training facilities), which inhibits the intention to transfer learning to job task, as argued by Foxon (1993). It may also be due to an inappropriate training environment that is noisy, dirty, has poor lighting, etc. Therefore, intention to transfer learning will not always supported positively by the training environment as revealed in this study.

Table 6.19 A summary of relevant research on training characteristics and training outcomes relationships: The training environment and intention to transfer learning.

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Machin and Fogarty (2003)	Training transfer-enhancing activities	Transfer implementation intentions	Transfer enhancing activities predicted transfer implementation intentions.
Diamantidis and Chatzoglou (2012)	Training environment	Learning	The trainer's performance had an insignificant impact on learning.
Al-Mughairi, (2018)	Training environment	Intention to transfer learning	Training environment had an insignificant relationship with intention to transfer learning.

6.5.5.2 Training methods and intention to transfer learning

H6c: Training methods have a significant positive relationship with intention to transfer learning.

The findings of this study reject the hypothesis that training methods have a positive influence on intention to intention to transfer learning (H6c, $\beta = 0.025$, $p = 0.707$, $t = 0.376$). This result is inconsistent with Nikadrou et al., (2009) who suggest that training methods can affect the perceived usefulness of the training. Lim (2000) showed that instructional methods promote the transfer of learning to daily work tasks, and Bansal and Thakur (2013) found that the quality of training was significantly related to the intention to transfer learning. Meanwhile, Yelon et al., (2004) found that motivation significantly influenced intention to transfer learning through the perceived usefulness of the training material (e.g., instructional methods) as shown in Table 6.120. The most likely explanation for the inconsistency of these results is that inappropriate methods inhibit the intention to transfer learning to the workplace, as argued by Foxon (1993). Further, this study showed that trainers mostly rely on traditional training methods (e.g. class teaching) to deliver their programmes. Thus, training methods will not always support positively the intention to transfer learning as revealed in this study.

Table 6.20 A summary of relevant research on training characteristics and training outcomes relationships: The training methods and the intention to transfer learning

Researchers	Independent variable Learning	Dependent variable Intention to transfer learning	Major Findings/Conclusion
Lim (2000)	Instructional methods	Transfer learning	The use of various instructional methods was considered an important strategy for training design that leads to successful training transfer.
Bansal and Thakur (2013)	Quality of training	Training transfer implementation intention	Training transfer implementation intention was positively correlated with quality of training.

Yelon et al., (2004)	Motivation to use new idea	Intentions to transfer training	Motivation to use new ideas had a significant impact on intention to transfer learning through the perceived usefulness of the training material.
Al-Mughairi, (2018)	Training methods	Intention to transfer learning	Training methods have a significant positive relationship with intention to transfer learning.

6.5.5.3 Trainer performance and behaviour, and intention to transfer learning

H7c: Trainer performance and behaviour have a significant positive relationship with intention to transfer learning.

The findings of this study do not support the hypothesis that trainer performance and behaviour positively influence the intention to transfer learning (H7c, $\beta = 0.041$, $p = 0.557$, $t = 0.587$). This result is inconsistent with Nikadrou et al., (2009) who suggest that trainer performance can affect the perceived usefulness of the training. However, this finding is consistent with Diamantidis and Chatzoglou (2012) who found that trainer performance and behaviour had an insignificant direct influence on the perceived usefulness of the training as depicted in Table 6.21. The most likely explanation for these results is the trainer's delivery style and level of credibility, which can inhibit the intention to transfer knowledge, as argued by Foxon (1993). Therefore, intention to transfer learning will not be always supported positively by trainer performance and behaviour, as revealed in this study.

Table 6.21 A summary of relevant research on training characteristics and training outcomes relationships: The trainer performance and behaviour, and the intention to transfer learning

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/Conclusion**
Diamantidis and Chatzoglou (2012)	Trainer performance and behaviour	Learning	The trainer performance had an insignificant impact on learning.
Nikadrou et al., (2009)	Trainer performance	Learning	The trainer performance had a significant impact on learning and transfer of learning.
Al-Mughairi, (2018)	Trainer performance and behaviour	Intention to transfer learning	Trainer performance and behaviour had an insignificant positive relationship with intention to transfer learning.

6.5.6 The training environment, methods, and trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.

The second main objective of this research is to explore whether or not the training environment, methods, and trainer performance and behaviour have a moderating effect on the relationship between learning and intention to transfer learning. Since there is a lack of empirical evidence on the proposed moderating effect of training characteristic on outcomes, this study contributes to the knowledge on the moderating effect of the training environment, methods, and trainer performance and behaviour on the relationship between reaction and learning, and between learning and the intention to transfer learning. To achieve this objective, three different hypotheses were proposed, as shown in Table 6.1 and as summarised below.

H5e: The training environment moderates the relationship between learning and intention to transfer learning.
H6e: Training methods moderate the relationship between learning and intention to transfer learning.
H7e: Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.

6.5.6.1 The training environment moderates the relationship between learning and intention to transfer learning

H5e: Training environment moderates the relationship between learning and intention to transfer learning.

The findings of this study do not support the hypothesis that the training environment moderates the relationship between learning and intention to transfer learning**.** As shown in Table 5.19, the training environment was not significantly correlated with learning. The findings also showed that the standardised estimate ($\beta = -0.010$) was weak and its corresponding p-value (0.846) was insignificant, which shows that there was no significant moderating impact of the training environment on learning and the intention to transfer learning, as depicted in Table 5.19. Therefore, hypothesis H3e was rejected. This finding is contrary to research conducted by Machin and Fogarty (2003), which showed that transfer-enhancing activities significantly influenced the intention to transfer learning. The most likely explanation for this inconsistency is the use of inappropriate media (training facilities), which inhibits the intention to transfer learning to the job task, as argued by Foxon (1993). Therefore, the training environment will not always moderate the relationship between learning and intention to transfer learning as this study revealed.

6.5.6.2 Training methods moderate the relationship between learning and intention to transfer learning

H6e: Training methods moderate the relationship between learning and intention to transfer learning.

Training methods were hypothesised to moderate the relationship between learning and intention to transfer learning (H6e); however, the findings from this study reject this hypothesis. Training methods were not significantly correlated with the intention to transfer learning, as depicted in Table 5.19. There was no significant moderating impact of the training methods on learning and the intention to transfer learning ($\beta = 0.004$, $p = 0.941$), as indicated in Table 5.19. This result is contrary to Nikadrou et al., (2009) who suggested that training methods could affect the perceived usefulness of the training. Moreover, Lim (2000) showed that instructional methods promote the transfer of learning, and Bansal and Thakur (2013) found that the quality of training is significantly related to intention to transfer learning. Furthermore, the findings in this study are inconsistent with Yelon et al., (2004) who found that the perceived usefulness of the training material (e.g., instructional methods) significantly mediated the relationship between motivation and intention to transfer learning as shown in Table 6.22. The most likely explanation for this inconsistency is that inappropriate methods inhibit the intention to transfer learning to the workplace, as argued by Foxon (1993). Therefore, training methods will not always moderate the relationship between learning and intention to transfer learning as the results of this study revealed.

Table 6.22 A summary of relevant research on training characteristics and training outcomes relationships: training methods moderate the relationship between learning and intention to transfer learning.

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Lim (2000)	Instructional methods	Transfer of learning	The use of various instructional methods was considered an important strategy for training design that leads to successful training transfer
Bansal and Thakur (2013)	Quality of training	Training transfer implementation intention	Training transfer implementation intention was positively correlated with quality of training.
Yelon et al., (2004)	Motivation to use new idea	Intentions to transfer training	Participants were motivated to use ideas when they thought that training methods were effective which support them to have intention to transfer training.
Al-Mughairi, (2018)	Training environment	The relationship between learning and intention to transfer learning	The training environment did not moderate the relationship between learning and intention to transfer learning.

6.5.6.3 Trainer performance and behaviour do not influence the relationship between learning and intention to transfer learning

H7e: Trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.

The results indicated that trainer performance and behaviour did not have a significant moderating effect on the relationship between learning and the intention to transfer learning, as depicted in Table 5.19. The results also revealed that there was no significant moderating impact of interaction of trainer performance and behaviour on learning and the intention to transfer learning ($\beta = 0.019$, $p = 0.699$), as indicated in Table 5.19. Therefore, hypothesis H7e, which predicts that trainer performance and behaviour would function as a moderator between learning and the intention to transfer learning, was not supported. These results were not in line with Nikadrou et al., (2009) who suggested that trainer performance can affect the perceived usefulness of training as shown in Table 6.23. The most likely explanation for these results is the trainer's delivery style and level of credibility, which can inhibit the intention to transfer knowledge, as argued by Foxon (1993). Thus trainer performance and behaviour will not always moderate the relationship between learning and intention to transfer learning as this study revealed.

Table 6.23 A summary of relevant research on training characteristics and training outcomes relationships: trainer performance and behaviour moderate the relationship between learning and intention to transfer learning.

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Nikandrou et al., (2009)	Trainer performance	Training transfer	During the training process, the complex interactions among the trainer and the trainees influence trainee characteristics, knowledge, skills nd abilities and result in direct or indirect training transfer to their work environment.
Al-Mughairi, (2018)	Trainer performance and behaviour	The relationship between learning and intention to transfer learning	Trainer performance and behaviour did not moderate the relationship between learning and intention to transfer learning.

Overall, Table 6.24 presents a summary of finding of Survey 2 (immediately after completed training). The following section discusses findings of Survey 3 (2-3 months after training).

Table 6.24 A summary of findings of Survey 2 (immediately after completed training) on relationships between training outcomes, and between training characteristics and training outcomes.

Researcher	Independent variable	Dependent variable	Major Findings
Al-Mughairi, (2018)	Reaction	Learning	Reaction had a significant positive relationship with learning.
	learning	Intention to transfer learning	Learning had an insignificant relationship with intention to transfer learning.
	Training environment	Reaction	The training environment had an insignificant relationship with reaction.
	Training methods		Training methods have an insignificant relationship with learning.
	Trainer performance and behaviour		Trainer performance and behaviour had a significant positive relationship with reaction.
	Training environment	Learning	The training environment had a significant positive relationship with learning.
	Training methods		Training methods had an insignificant relationship with learning.
	Trainer performance and behaviour		Trainer performance and behaviour have a significant positive relationship with learning.
	Training environment	The relationship between reaction	The training environment did not moderate the relationship between reaction and learning.

	Training methods	and learning.	Training methods did not moderate the relationship between reaction and learning.
	Trainer performance and behaviour		Trainer performance and behaviour did not moderate relationship between reaction and learning.
	Training environment	Intention to transfer learning	Training environment had an insignificant relationship with intention to transfer learning.
	Training methods		Training methods had an insignificant relationship with intention to transfer learning.
	Trainer performance and behaviour		Trainer performance and behaviour had an insignificant relationship with intention to transfer learning.
	Training environment	The relationship between learning and intention to transfer learning	The training environment did not moderate the relationship between learning and intention to transfer learning.
	Training methods		The training methods did not moderate the relationship between learning and intention to transfer learning.
	Trainer performance and behaviour		Trainer performance and behaviour did not moderate the relationship between learning and intention to transfer learning.

6.6 Discussion on the results of Survey 3

The theoretical model of Survey 3 is based on the assumption that there is a significant relationship between Kirkpatrick's four levels. Following the theoretical foundation presented in Chapters 2 and 3, this study divided training outcomes into two categories: (1) behaviour and (2) results. It also divided training characteristics into two categories: (1) training content and (2) training objectives.

The final revised model of Survey 3 is comprised of four constructs and seven relationships, as shown in Figure 5.11, Table 6.1. The hypotheses testing for survey 2-3 months are summarised below. This study proposed that behaviour would have an influence on results, and the findings of this study support this hypothesis; see Table 6.25 and Table 6.32. In turn, behaviour would be influenced by training content and training objectives; see Table 6.26, Table 6.27 and Table 6.32. The results of this study revealed that training content and objectives had no significant impact on results; see Table 6.28, Table 6.29 and Table 6.32. Also, training content and training objectives did not moderate the relationship between behaviour and results; see Table 6.30, Table 6.31 and Table 6.32.

H8: Behavioural change has a significant positive relationship with results.
H9a: Training content has a significant positive relationship with behavioural change.
H9b: Training content has a significant positive relationship with results.
H10a: Training objectives have a significant positive relationship with behavioural change.
H10b: Training objectives have a significant positive relationship with results.
H9c: Training content moderates the relationship between behavioural change and results.
H10c: Training objectives moderate the relationship between behavioural change and results.

6.6.1 Relationship between behaviour and results

H8: Behavioural change has a significant positive relationship with results.

As discussed in Chapters 2, section 2.8 and 3, section 3.7, this study proposed that results would be influenced by behaviour. Behaviour measures a trainee's capacity to apply knowledge and skills in the workplace, while results assess the impact of training on the organisation (Kirkpatrick and Kirkpatrick, 2006). The results from Survey 3 support and confirm the hypothesis that behaviour has a significant positive influence on results (H8, $\beta = 0.110$, $p < 0.05$, $t = 2.117$). The results of this study support one of the original assumptions that there is a positive relationship between behaviour and results (Kirkpatrick, 1996). This finding is consistent with studies by Clement (1982), Homklin et al., (2013), and Lin et al. (2011) who also showed that there is a significant relationship between behaviour and results as shown in Table 6.25. When trainees can apply new skills and knowledge to their workplace, organisations are likely to show better results from training. Thus, behavioural change will support positively results; which is consistent with findings of this study. This study supports that organisations are likely to see better results from training when their employees can transfer new skills and knowledge to their workplaces.

Table 6.25 A summary of relevant research on the relationship between behavioural change and results.

Researchers	Independent variable	Dependent variable results	Major Findings/Conclusion
Clement (1982)	Behaviour	Results	Trainees' improvement in managing behaviour was related to the desired organisational results.
Homklin et al., (2013)	Behaviour	Results	Behavioural change was significantly related to organisational results
Lin et al., (2011)	Behaviour	Results (organisation commitment)	Golf club employees' training behaviour had a positive influence on employees' organisation commitment.
Al-Mughairi, (2018)	Behavioural change	Results	Behavioural change had a significant positive relationship with results.

6.6.2 Training content, objectives, and behaviour

6.6.2. 1 Training content and behaviour

H9a: The training content has a significant positive relationship with behavioural change.

According to Gauld and Miller (2004), training content should involve theoretical and practical aspects, as well as the transfer of new knowledge and skills. Training content is described as training materials, such as manuals, handouts, notes, etc. (Carliner, 2003; Charney and Conway, 2005). These materials have an influence on learning outcomes (Kontoghiorghes, 2002, 2004; Kirkpatrick and Kirkpatrick, 2006).

The findings of this study confirmed the hypothesis that training content has a significant positive influence on behaviour (H9a, $\beta = 0.159$, $p < 0.01$, $t = 2.730$). This finding is consistent with studies by Bates et al. (2007), Velada et al. (2007), and Grohmann et al., (2014) who also examined this relationship. Furthermore, this study is in agreement with Farr et al. (1993) who stressed that training content has a significant impact on reaction, learning, behaviour and results, but is in contrast to Diamantidis and Chatzoglou, (2012) who found an insignificant relationship between training content and training usefulness as shown in Table 6.26. The results of this study also show that training content was the second strongest factor contributing to the behaviour with a path coefficient of 0.159. When training content is related closely to the job, it is more likely that new skills and knowledge will be applied to the workplace. Thus, behavioural change will be supported positively by training content which is consistent with the results of this study. This study supports that improvement and change in behaviour occurs when the training content are relevant to the trainee's work task.

Table 6.26 A summary of relevant research on training characteristics and training outcomes relationships: training content and behaviour.

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/conclusion**
Velada et al., (2007)	Transfer design	Transfer of training	Transfer design significantly predicted transfer of Training.
Grohmann et al., (2014)	transfer design	Perceived application to practice	Transfer design and perceived application to practice were significantly related.
	Training content		Training content had a significant effect on perceived application to practice.
Diamantidis and Chatzoglou, (2012)	Training content	Training usefulness	The training content had insignificant impact on training usefulness.
Al-Mughairi,(2018)	Training content	Behavioural change	The training content has a significant positive relationship with behavioural change.

6.6.2.2 Training objectives and behaviour

H10a: Training objectives have a significant positive relationship with behavioural change.

A training objective is an important aspect of characteristics; therefore, any absence of training goals negatively influences the training evaluation process and influences the overall success of the training programme (Buckley and Caple, 2004; Goldstein and Ford, 2002). Glaister et al., (2013) suggested that training objectives are critical for linking training assessments with training characteristics. Therefore, training objectives are related to transfer of learning (Reid and Barrington, 2011).

The findings of this study confirmed the hypothesis that training objectives have a significant positive influence on behaviour (H4b, $\beta = 0.169$, $p < 0.01$, $t = 2.908$). This finding is in line with the findings of Tziner et al., (1991) who suggested that goal setting may contribute to transfer of learning. Brown (2005), Diamantidis and Chatzoglou (2012), Gist et al. (1990), Johnson et al. (2012), Latham and Saari (1979), Morin and Latham (2000), Richman-Hirsch (2001), Wexley and Baldwin (1986), and Wexley and Nemeroff (1975) also found a positive relationship between goal setting and transfer of learning as depicted in Table 6.27. In particular, Reber and Wallin (1984) found a positive relationship between goal achievements and progress when observing workers' use of safe procedures nine months later. Goals may contribute to a greater transfer of learning as goal setting offers information that is useful for improving self-efficacy, as suggested by Tziner et al., (1991). The finding of this study also show that training objectives were the strongest factor contributing to the results with a path coefficient of 0.169. Therefore, improvements or changes in behaviour occur once a training objective is met. Thus, the findings of this study confirm the link between achievement of training objectives, and behaviour. This study support that improvements or changes in behaviour occur once a training objective is met.

Table 6.27 A summary of relevant research on training characteristics and training outcomes relationships: training objectives and behaviour.

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Brown (2005)	Training objectives	Transfer (maintenance and generalisation)	Both participants who were urged to do their best and those who set proximal plus distal goals had increased transfer (that is, generalisation and maintenance) relative to those who set outcome goals.
Diamantidis and Chatzoglou (2012)	Training objectives	Training usefulness	Training objectives had a significant impact on training usefulness.
Gist et al., (1990)	Goal-setting	Transfer of learning (skill generalisation)	Goal-setting training yield a higher rate of skill repetition than self-management training.
Johnson et al., (2012)	Goal-setting	Behavioural change	Goals and perceived behaviour change were related.
Latham and Saari (1979)	Goal-setting	Performance improvement	Setting specific goals leads to higher performance than urging people to do their best.
Morin and Latham (2000)	Goal-setting	Transfer of learning	The self-efficacy of the participants who engaged in either mental practice alone or mental practice and goal-setting with communication behaviour on the job were significantly correlated.
Richman-Hirsch (2001)	Goal-setting	Transfer of training (maintenance)	Goal-setting training had a significant impact on transfer of training.
Wexley and Baldwin	Assigned and participative goal-	Transfer of learning	Both the assigned and participative goal-setting conditions had a significant positive effect on maintenance of

(1986)	setting		behavioural change over a two-month period.
Wexley and Nemeroff (1975)	Goal-setting	Work Satisfaction	The programme involving delayed appraisal plus goal-setting was significantly more effective for increasing subordinate work satisfaction than the treatment involving delayed appraisal, goal-setting, and telecoaching.
Clement (1982)	Behaviour	Results	Trainees' improvement in managing behaviour was related to the desired organisational results.
Homklin et al., (2013)	Behaviour	Results	Behavioural change was significantly related to organisational results.
Lin et al., (2011)	Behaviour	Results (organisation commitment)	Golf club employees' training behaviour had a positive influence on employees' organisation commitment.
Al-Mughairi, (2018)	Training objectives	Behavioural change	Training objectives had a significant positive relationship with behavioural change.

6.6.3 Training content, objectives, and results

6.6.3.1 Training content and results

H9b: The training content has a significant positive relationship with results.

The findings of this study do not support the hypothesis that training content has a positive influence on results (H9b, β = 0.002, p = 0.968, t = 0.040). Therefore, the results of this study are inconsistent with previous studies by Bates et al. (2007), Velada et al., (2007), and Grohmann et al., (2014) who found a significant relationship between training content and behaviour, and Clement (1982), Homklin et al. (2013), and Lin et al., (2011) who found a significant relationship between behaviour and results as shown in Table 6.28. More specifically they contradict Diamantidis and Chatzoglou (2014) who found a significant relationship between the application of training content and employee job performance (training results). However, the results of this study are consistent with Diamantidis and Chatzoglou (2012) who found that training content had an insignificant influence on both learning and training usefulness. Thus, the results will not be always supported positively by training content as revealed in this study.

Table 6.28 A summary of relevant research on training characteristics and training outcomes relationships: training content and results

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/conclusion**
Bates et al., (2007)	Training content	Transfer of learning	Training content was a significant predictors of transfer of learning.
Velada et al., (2007)	Transfer design	Transfer of training.	Transfer design was a significantly predicted transfer of training.
Grohmann et al., (2014)	Transfer design	Perceived application to practice	Transfer design and perceived application to practice were significantly related.
	Training content		Training content had a significant effect on perceived application to practice.
Clement (1982)	Behaviour	Results	Trainees' improvement in managing behaviour was related to the desired organisational results..

Homklin et al., (2013)	Behaviour	Results	Behavioural change was significantly related to organisational results.
Lin et al., (2011)	Behaviour	Results (organisation commitment)	Golf club employees' training behaviour had a positive influence on employees' organisation commitment.
Diamantidis and Chatzoglou (2014)	Training content	Training results	The application of training content were positively related to employee job performance (training results).
Diamantidis and Chatzoglou (2012)	Training content	Training usefulness	Training content had an insignificant impact on training usefulness.
Al-Mughairi, (2018)	Training content	Results	Training content had an insignificant relationship with results.

6.6.3.2 Training objectives and results

H10b: The training objectives have a significant positive relationship with results.

The findings of this study do not support the hypothesis that training objectives have a positive influence on results (H2b, $\beta = 0.048$, $p = 0.385$, $t = 0.869$). This result is inconsistent with previous studies by Brown (2005), Diamantidis and Chatzoglou (2012), Gist et al. (1990), Johnson et al. (2012), Latham and Saari (1979), Morin and Latham (2000), Richman-Hirsch (2001), Wexley and Baldwin (1986), and Wexley and Nemeroff (1975) who found that goal setting had a positive impact on the transfer of learning as depicted in Table 6.29. It is also inconsistent with Clement (1982), Homklin et al. (2013), and Lin et al., (2011) who revealed a positive relationship between behaviour and results. Therefore, the results will not be always supported positively by training objectives as revealed in this study.

Table 6.29 A summary of relevant research on training characteristics and training outcomes relationships: training objectives and results

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/Conclusion**
Brown (2005)	Training objectives	Transfer (maintenance and generalisation)	Both participants who were urged to do their best and those who set proximal plus distal goals had increased transfer (that is, generalisation and maintenance) relative to those who set outcome goals.
Diamantidis and Chatzoglou (2012)	Training objectives	Training usefulness	The training objectives had a significant impact on training usefulness.
Gist et al., (1990)	Goal-setting	Transfer of learning (skill generalisation)	Goal-setting training yield a higher rate of skill repetition than self-management training.
Johnson et al., (2012)	Goal-setting	Behavioural change	Goals and perceived behaviour change were related.
Latham and Saari (1979)	Goal-setting	Improvement performance	Setting specific goals leads to higher performance than urging people to do their best.
Morin and Latham (2000)	Goal-setting	Transfer of learning	The self-efficacy of the participants who engaged in either mental practice alone or mental practice and goal-setting with communication behaviour on the job were significantly correlated.

Richman-Hirsch (2001)	Goal-setting	Transfer of training (maintenance)	Goal-setting training had a significant impac on transfer of training.
Wexley and Baldwin (1986)	Goal-setting	Transfer of learning	Both the assigned and participative goal-setting conditions had a significant positive effect on maintenance of behavioural change over a two-month period.
Wexley and Nemeroff (1975)	Goal-setting	Work Satisfaction	The programme involving delayed appraisal plus goal-setting was significantly more effective for increasing subordinate work satisfaction than the treatment involving delayed appraisal, goal-setting, and telecoaching.
Clement (1982)	Behaviour	Results	Trainees' improvement in managing behaviour was related to the improvement in their subordinates' satisfaction.
Homklin et al., (2013)	Behaviour	Results	The behavioural change was significantly related to organisational results.
Lin et al., (2011)	Behaviour	Results (organisation commitment)	Golf club employees' training behaviour had a positive influence on employees' organisation commitment.
Al-Mughairi, (2018)	Training objectives	Results	Training objectives had an insignificant relationship with results.

6.6.4 Training content and objectives moderate the relationship between behaviour and results

The next main objective of this research is to explore whether or not training content and objectives have any moderating effects on the relationship between behaviour and results. This study contributes valuable insight since there is a lack of empirical evidence on this topic. Two different hypotheses were developed to achieve this objective, as depicted in Table 6.1 and as are summarised below.

H9c: The training content moderates the relationship between behavioural change and results.
H10c: The training objectives moderate the relationship between behavioural change and results.

6.6.3.1 Training content moderates the relationship between behaviour and results

H9c: Training content has a moderate relationship with behavioural change and results.

The results indicate that training content does not have a significant moderating effect on the relationship between behaviour and results. The statistics showed that training content was not significantly correlated with results, as depicted in Table 5.19 and Table 6.1. The results also indicated that there was no significant moderating impact between interaction of training content with behaviour and results ($\beta = -0.041$, $p = 0.771$), as indicated in Table 5.19 and Table 6.1. Therefore, the hypothesis that training content would function as a moderator between behaviour and results was not supported. This finding is inconsistent with studies by Bates et al., (2007), Velada et al., (2007), and Grohmann et al., (2014) who found a relationship between training content and behaviour as shown in Table 6.30. This study also found an insignificant relationship between training content and behaviour, which is consistent with Diamantidis and Chatzoglou (2012) who found that training content has an insignificant influence on training usefulness. The insignificant moderating effect of training content on the relationship between behaviour and results could be attributed to the connection between behaviour and results, which is strengthened by other training design and delivery factors (e.g., trainer performance and behaviour, training methods and the training environment) or by individual and environmental factors, but not by training content, as it was in this case. Thus, the strength of the relationship between behaviour and results is not supported by training content as revealed in this study.

Table 6.30 A summary of relevant research on training characteristics and training outcomes relationships: training content moderates the relationship between behaviour and results

Researchers	**Independent variable**	**Dependent variable**	**Major Findings/Conclusion**
Bates et al., (2007)	Training content	Transfer of learning	Training content was a significant predictor of transfer of learning.
Velada et al., (2007)	Transfer design	Transfer of training.	Transfer design significantly predicted transfer of training.
Grohmann et al., (2014)	Transfer design	Perceived application to practice	Transfer design and perceived application to practice were significantly related.
	Training content		Training content had a significant effect on perceived application to practice.
Diamantidis and Chatzoglou (2012)	Training content	Training usefulness	The Training content had an insignificant impact on training usefulness.
Al-Mughairi, (2018)	Training content	The relationship between behavioural change and results	Training content did not moderate the relationship between behavioural change and results.

6.6.3.2 Training objectives moderate the relationship between behaviour and results

H10c: The training objectives moderate the relationship between behavioural change and results.

It was hypothesized that training objectives would moderate the relationship between behaviour and results; however, the results of this study rejected that hypothesis. Training objectives were not significantly correlated with results, as depicted in Table 5.19 and Table 6.1. Furthermore, the statistics showed no significant moderating impact between the interaction of training objectives with behaviour and results ($\beta = 0.144$, $p = 0.415$), as indicated in Table 5.19 and Table 6.1. This finding is inconsistent with studies conducted by Brown (2005), Gist et al. (1990), Johnson et al. (2012), Latham and Saari (1979), Morin and Latham (2000), Richman-Hirsch (2001), Wexley and Baldwin (1986), and Wexley and Nemeroff (1975) who examined the impact of goal setting on the transfer of learning as shown in Table 6.31. This result is also contrary to findings by Clement (1982), Homklin et al., (2013) who found a significant relationship between behaviour and results. This difference is perhaps due to the fact that the relationship between behaviour and results is strengthened by other training design and delivery factors (e.g., trainer performance and behaviour, training methods, and the training environment) or by individual and environmental factors but not by training objectives, as it was in this case. Thus training objectives will not moderate the relationship between behaviour and results as revealed by this study.

Table 6.31 A summary of relevant research on training characteristics and training outcomes relationships: training objectives moderate the relationship between behaviour and results

Researchers	Independent variable	Dependent variable	Major Findings/Conclusion
Brown (2005)	Training objectives	Transfer (maintenance and generalisation)	Both participants who were urged to do their best and those who set proximal plus distal goals had increased transfer (that is, generalisation and maintenance) relative to those who set outcome goals.
Gist et al., (1990)	Goal-setting	Transfer of learning (skill generalisation)	Goal-setting training yields a higher rate of skill repetition than self-management training.
Johnson et al., (2012)	Goal-setting	Behavioural change	There was a relationship between goals and perceived behaviours change competencies (e.g. developing others and building and maintaining relationships)
Latham and Saari (1979)	Goal-setting	Improvement performance	Setting as specific goals leads to higher performance that urging people to their best was accepted.
Morin and Latham (2000)	Goal-setting	Transfer of learning	The self-efficacy of the participants who engaged in either mental practice alone or mental practice and goal-setting with communication behaviour on the job were significantly correlated.
Richman-Hirsch (2001)	Goal-setting	Transfer of training (maintenance)	Goal-setting training had a significant impact on transfer of training.
Wexley and Baldwin (1986)	Assigned and participative goal-setting	Transfer of learning	Both the assigned and participative goal-setting conditions had a significant positive effect on maintenance of behavioural change over a two-month period
Wexley and Nemeroff (1975)	Goal-setting	Work Satisfaction	The programme involving delayed appraisal plus goal-setting was significantly more effective in increasing subordinate work satisfaction than the treatment involving delayed appraisal, goal-setting, and telecoaching.
Clement (1982)	Behaviour	Results	Trainees' improvement in managing behaviour was related to the desired organisational results.
Homklin et al., (2013)	Behaviour	Results	The behavioural change was significantly related to organisational results.
Lin et al., (2011)	Behaviour	Results (employees' organisation commitment)	Employees' training behaviour had a positive influence on employees' organisation commitment.
Al-Mughairi, (2018)	Training objectives	The relationship between behaviour and results	Training objectives did not moderate the relationship between behaviour and results.

Table 6.32 presents a summary of finding of Survey 3(2-3 months after training).

Table 6.32 A summary of findings of survey 3 (2-3 months after training) on relationships between training outcomes, and between training characteristics and training outcomes.

Researchers	Independent variable	Dependent variable	Major Findings
Al-Mughairi, (2018)	Behavioural change	Results	Behavioural change had a significant positive relationship with results.

	Training content	Behavioural change	Training content had a significant positive relationship with behavioural change.
	Training objectives		Training objectives had a significant positive relationship with behavioural change.
	Training content	Results	Training content had an insignificant relationship with results.
	Training objectives		Training objectives had an insignificant relationship with results.
	Training content	The relationship between behavioural change and results	Training content did not moderate the relationship between behavioural change and results.
	Training objectives		Training objectives did not moderate the relationship between behaviour and results.

Overall, the results of this study reveal the possibility that expectations of trainer performance and behaviour, and expectations of the training environment are not directly affected by trainee readiness, as well as expectations for the training outcomes are not directly affected by pre- training intervention activities. On the other hand, trainee readiness was the strongest factor contributing to expectations about the training outcomes. Moreover, pre-training intervention and activities were the strongest factors supporting expectations of the training environment compared with expectations about trainer performance and behaviour.

Furthermore, the results of this study indicate the possibility that the level of reaction was not directly affected by the training environment or the training methods. Likewise, there was a possibility that the level of learning was not directly affected by the training methods, and the intention to transfer learning was not directly affected by the training environment, training methods or trainer performance or behaviour. On the other hand, this study shows that trainer performance and behaviour were the strongest factors contributing to reaction, and trainer performance and behaviour (followed by the training environment) were the strongest factors contributing to learning. Moreover, the findings from this study indicated the possibility that training content did not directly affect the results of the training programme. This study shows that training objectives (followed by training content) were the strongest factors contributing to behaviour. Finally, this study revealed that the relationship between reaction and learning, and between learning and intention to transfer learning were not moderated by training environment, training methods, and trainer performance and behaviour. This study also indicated that training content and objectives do not moderate the relationship between behaviour and results.

6.7 Discussion on research questions

As discussed in Chapter 1, the research problem is addressed by two main questions:

1-What are the effects and moderating roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and *behaviour, training content, and training objectives) on the relationships between of training outcomes (reaction, learning, intention to transfer learning, behaviour, and results) during three separate time periods (before, immediately after, and 2–3 months after training) during three separate time periods (before, immediately after, and 2–3 months after training)?*

2-What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?

These research questions were addressed by developing a conceptual framework that described the moderating effect of training characteristics (training environment, training methods, trainer performance and behaviour, training content, and training objectives) on the relationship between Kirkpatrick's four training outcomes (reaction, learning, behaviour, and results) and on the intention to transfer learning during three separate time periods (before, immediately after, and 2–3 months after training). Subsequently the effect of training characteristics on training effectiveness was also examined.

A quantitative method was used to refine the model and test the research hypotheses. The results of the tests provided various insights into the effectiveness of health and safety training in Oman's national oil and gas industry. These insights offered answers to the research questions and are summarized below:

6.7.1 First research question

Q1: What are the effects and moderating roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, and training objectives) on the relationships between of training outcomes (reaction, learning, intention to transfer learning, behaviour, and results) during three separate time periods (before, immediately after, and 2–3 months after training) during three separate time periods (before, immediately after, and 2–3 months after training)?

In order to evaluate training effectiveness, the first research question above seeks to understand the roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour), as well as training content and training objectives, during three separate time periods (before, immediately after, and 2–3 months after training). The role of the training characteristics was emphasised through their direct impact on training effectiveness and by their moderating effect on the relationship between Kirkpatrick's four training outcomes, as well as the intention to transfer learning. In order to address this question, it was necessary to evaluate the impacts of the training characteristics on the training outcomes during separate time periods (before, immediately after, and 2–3 months after training). This preliminary step was intended to operationalise the constructs and test their impacts on training effectiveness.

- **Pre-training**

The results of the study in the pre-training stage indicated that pre-training interventions and activities were related to expectations for trainer performance and behaviour, as well as expectations for the training environment ($t= 4.379$, $p=.001 \leq .001$, $t=10.400$, $p=.001 \leq .001$, respectively). This showed that pre-training interventions and activities are fundamental for building trainees' expectations of training characteristics. The study found that expectations for the training outcomes were related to trainee readiness ($t=3.435$, $p=.001\leq .001$). This demonstrated that prior skills and knowledge, as well as the involvement of trainees in the training assessment, contributed positively to helping individuals set expectations about the training outcomes.

There were two unanticipated findings in this stage of the study. The first was the insignificant direct relationship between pre-training interventions and activities, and expectations for the training outcomes ($t= -2.198$, $p=.028 \leq .05$). The second was the insignificant impact of trainee readiness on expectations of trainer performance and behaviour, and expectations of the training environment ($t=-3.344$, $p=.001\leq .001$, $t=-3.065$, $p=.002 \leq .01$). These results are likely related to the variance in cognitions, motivations, expectations, needs and desires of individuals who participate in training programmes. Each individual enters the training programme with certain expectations, motivations, and attitudes that determine their training outcomes (Baldwin et al., 2009; Tannenbaum et al., 1991).

- **Immediately after training**

This study found a significant and positive relationship between reaction and learning immediately after training ($t=2.643$, $p=.008 \leq 0.01$). Trainee reaction was tested in this study as multidimensional construct that relies on trainees' satisfaction, their opinion of training difficulties and relevance of training. This demonstrates that reaction is a multidimensional measure that relies on trainee satisfaction, enjoyment, difficulties, quality of training, and the efficiency and usefulness of training (Warr and Bunce, 1995; Kirkpatrick, 1996; Giangreco et al., 2010). Therefore, in order to improve training evaluation procedures, it is necessary to address the various dimensions of reaction when measuring training effectiveness.

An unexpected result in this stage of the study was the insignificant relationship between learning and intention to transfer learning (t=.146, p=.884 ≤ .05). This shows that perceived success in learning provides no guarantee that the learner will have intentions to apply their new skills and knowledge to the workplace (Machin and Fogarty, 2003). In other words, positive learning outcomes did not always support trainees' intentions to transfer learning.

The results highlight the link between some training characteristics and training outcomes. It found a predictable relationship between trainer performance and behaviour, and reaction and learning (t=1.995, p=.046 ≤ .05, t=2.026, p=.043≤ .05, respectively). This shows the important role that trainer performance and behaviour play in accomplishing training outcomes: the higher the trainer's performance and behaviour, the greater the training outcomes will be. In addition, it showed a predictable effect of the training environment on learning (t=2.391, p=.017≤ .05) by showing the significant role of the training environment in supporting trainees to acquire knowledge and skills.

Two other unexpected outcomes were: (1) the insignificant direct link between the training environment, training methods on reaction (t=.488, p=.625≤ .05, t=.068, p=.303 ≤ .05 respectively) and (2) the insignificant relationship between training methods and learning (t=.040, p=.968 > .05). These results are likely related to the fact that the training methods did not always support trainee participation. Further, workers usually prefer to complete their duties using traditional procedures and methods, and perceive new approaches to be risky and problematic (Lucas (2005). In addition, the training methods required for delivery of training may vary between small and large training facilities.

This study found an insignificant link between all training characteristics (training environment and training methods and trainer performance and behaviour) and intention to transfer learning (t=-0.360, p= .719, t=.376, p=.707, t=.112, p=.557 > .05; respectively). Thus the skills and knowledge gained are not a guarantee of intention to transfer them to participants' daily work participants. This demonstrates that trainees' feelings and beliefs about transferring their learning to the workplace were not supported by training characteristics if training characteristics, were insufficient and inadequate or not equipped.

The strength of the relationship between reaction and learning, and between learning and intention to transfer learning were detected by moderating the impacts of the training characteristics. The impacts of moderation were analysed by comparing three conditions. First the simple effects (independent and dependent, e.g., reaction and learning, learning and intention to transfer learning). Second the impact of the moderator on the dependent variables (training characteristics on learning and on intention to transfer learning). Then by comparing the effects of the interaction (training characteristic X reaction, and training characteristic X learning). The findings suggest that training characteristics (e.g., training environment, training methods and trainer performance and behaviour) have no moderating impact on the relationships between reaction and learning, or between learning and intention to transfer learning. Important insights can be drawn from these results: training characteristics did not support the strength of the relationships between reaction and learning and, between learning and intention to transfer learning. The results of testing the moderating effect of the training environment, training methods and trainer performance and behaviour on the relationships between reaction and learning showed a very strong relationship between reaction and learning (β=0.147,β=.151, β=.140, respectively; p >.05) before inserting those factors. However after including those factors (training environment, training methods and trainer performance and behaviour, the levels of the strength of relationship between reaction and learning reduce to (β= 0.001, β= .023, β=-0.009, respectively; p >.05). Thus, training environment, training methods, and trainer performance and behaviour have no moderating impact on the relationships between reaction and learning

The results of testing the moderating effect of the training environment, training methods, and trainer performance and behaviour on the relationships between learning and intention to transfer learning showed an insignificant relationship between learning and intention to transfer learning (β=0.063, β=.061, β=.057, respectively; p >.05) before inserting those factors. However after including those factors (training environment, training methods, and trainer performance and behaviour) in those insignificant relationships between learning and intention to transfer learning, they will not convert to be significant (β=-.010 β=.004, β=.019, respectively; p >.05). Future research could explore the moderating impact of the relationships between training outcomes by other different training characteristics or other factors.

- **2–3 months after training**

This study found a significant relationship between behaviour and results (t=2.117, p=.034 ≤ .05) 2–3 months after training. This shows that organisations are likely to see better results from training when their employees can transfer new skills and knowledge to their workplaces. As expected, this study revealed the significant direct impact of training content and training objectives on behaviour (t=2.730, p=.006 ≤.01, t=2.908, p=.004 ≤.01 respectively). These results demonstrate that improvement and change in behaviour occurs when the training content or training objectives are relevant to the trainee’s work task.

One unanticipated finding from this stage of the study was the insignificant direct effect of the relationship between training content and training objectives on results (t=.869, p=.385, t=1.765, p= .078 > .05). Testing the moderation model revealed no moderation impact between training characteristics (e.g., training content and training objectives) and the relationship between behaviour and results (β= -0.041, t= -.292, β= 0.144 and t= 0.816, respectively; p >.05). This finding demonstrates that the relationship between behaviour and results may be strengthened by other training characteristics or other contextual or organisational factors such as supervisor or management support.

6.7. 2 Second research question

Q2: What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?

The following are lessons that were learned by applying this theoretical framework to health and safety training in the Omani national oil and gas industry.

This research found a significant and positive relationship between pre-training interventions and activities, and expectations of trainer performance and behaviour (t= 4.379, p=.001 ≤. 001) as well as expectations of the training environment (t=10.400, p=.001 ≤ .001). Thus, pre-intervention practices and activities may result in more optimistic expectations from the trainees; it did help the trainees to set realistic expectations about the training outcomes and its characteristics before training began.

This study showed a significant and positive relationship between trainee readiness and expectations for the training outcomes (t=3.435, p=.001≤. 001). Hence, preparing trainees before the training begins by involving them in a training assessment and providing them with the necessary information about the training is necessary step. Further, helping them to identify the required training goals is critical to achieving the training outcomes and overcoming difficulties during the training.

This study found that pre-training interventions and activities were the strongest factors contributing to expectations of the training environment (β=.536), as well as expectations of trainer performance and behaviour (β=.166). Meanwhile, trainee readiness most strongly supported positive expectations for the training outcomes (β=.176). Based on this finding, this research suggests that training professionals and organisations should prepare trainees before the training begins, and provide pre-intervention practices and activities for trainees as they contribute positively to make training a success.

This study revealed the significant and positive relationship between reaction and learning (t=2.643, p=.008 ≤ 0.01), which emphasises that a positive training experience for trainees has positive influence on acquired skills and knowledge.

This research indicated that reaction was significantly and positively influenced only by trainer performance and behaviour (t=1.995, $p=.046 \leq .05$). Learning was significantly and positively influenced by the training environment (t=2.391, $p=.017 \leq .05$), and trainer performance and behaviour (t=2.026, $p=.043 \leq .05$). Trainer performance and behaviour were the strongest factors contributing to reaction (β =.137), and the training environment, followed by trainer performance and behaviour, were the strongest factors supporting learning (β =0.148, β= 0.129, respectively; $\leq .05$). These results provide practitioners with a set of training characteristics that they can invest in to achieve the desired results, as perceived by the trainees.

This study indicated the significant and positive relationship between behaviour and results (t=2.117, $p=.034 \leq .05$). Training content and training objectives had a significant and positive relationship with behaviour (t=2.730, $p=.006 \leq .01$, t=2.908, $p=.004 \leq .01$, respectively). Based on this finding, this research suggests that training professionals and organisations should invest more money and effort into those training characteristics that contribute to successful training.

6.8 Conclusion

This chapter discussed a quantitative data analysis that was conducted using three survey samples. The results of the scale and population, assessment of reliability and validity, hypotheses testing and further discussion of research questions are discussed. All the hypotheses proposed in the framework were discussed in the context of preceding studies, and inferences for future recommendations were found. The results of the data analysis and 7 hypotheses testing for Survey 1 revealed that pre-training intervention and practices significantly positively impact on expectations of trainer performance and behaviour, and expectations of the training environment. Further, trainees' readiness is significantly related to expectation of training outcomes. The results of the data analysis and 16 hypotheses testing for Survey 2 clarified that reaction has a strong effect on learning, the training environment is significantly related to learning, and trainer performance and behaviour have a strong effect on reaction and on learning. Moreover, learning had no significant direct impact on intention to transfer learning; therefore, the training environment, training methods and trainer performance and behaviour had no direct impact on intention to transfer learning as well as there being no moderating impact of training environment, training methods, and trainer performance and behaviour on the relationship between learning and intention to transfer learning. Although there was a significant relationship between reaction and learning, the results of Survey 2 clarified that the training environment, training methods and trainer performance did not moderate the relationship between reaction and learning. The data analysis and 7 hypotheses testing for Survey 3 indicated a significant and positive relationship between behaviour and results, and training content and training objectives, which were significantly related to behaviour. Furthermore, although there was a significant relationship between behaviour and results, the results of Survey 3 clarified that training content and training objectives do not moderate the relationship between behaviour and results. The next chapter will present an overall conclusion and recommendations for future research.

Chapter Seven: Conclusions and Recommendations

7.0 Introduction

This chapter begins by representing the research questions, aim and objectives and then discussing the achievement of each objective within the thesis chapters. The research gaps are then revisisted followed by discussion of the research findings. Theoretical, practical and managerial implications of this study's findings are considered, and the methodological and theoretical limitations of the study are discussed. Finally, some suggestions for future research avenues are presented.

7.1 The research aim, objectives and questions

This section presents the research aim, objectives and questions that were identified in chapter 1 (Introduction), section 1.8 and demonstrates where these objectives were accomplished in this thesis.

7.1.1 Main aim of the study

This study aims to evaluate the impact of training characteristics on training effectiveness within the context of the Omani national sector oil and gas industry. Training characteristics are defnied as the attributes that influence training outcomes and in this study comprise: training objectives, training content, trainer performance, training methods, and the training environment (Kirkpatrick, 1996). Training effectiveness is defined as the extent to which the training objectives or training's goal are achieved" (Homklin et al., 2014, p.2). The research aims to develop a suitable framework not only for implementation in the Omani national sector oil and gas industry, but also for use by organisations in various sectors worldwide.

7.1.2 Research Objectives

This research fulfils the following five research objectives.

Table 7.1 Research objectives

Objective number	Description
1	To identify four Kirkpatrick training (reaction, learning, behaviour and results) and intention to transfer learning, and the key training characteristics that influence them.
2	To examine the effect of training characteristics (pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, training objectives) on expectations of the training environment, expectation of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results.
3	To investigate the moderating impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content, training objectives) on the relationship between reaction, learning, intention to transfer learning, behaviour and results.

4	To develop a conceptual framework and related set of hypotheses that defines the impact of training characteristics on training effectiveness in national oil and gas companies.
5	To provide recommendations and suggestions for maximising training effectiveness in practice and contribute to the existing literature.

7.1.3 Research questions

In order to accomplish the aim of the study, two primary research questions were generated.

The primary research questions according to the main aim of the study are the following:

1- *What are the effects and moderating roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, and training objectives) on the relationships between training outcomes (reaction, learning, intention to transfer learning, behaviour, and results), and on expectations for training characteristics and expectations for training outcomes during three separate time periods (before, immediately after, and 2–3 months after training)?*

2- *What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?*

7. 1 4 Meeting the research aim and objectives

Table 7.2 shows each objective and the chapter/s where the objectives were achieved.

Table 7.2 Meeting the research objectives

Objective number	Description	Chapter/s
1	To identify four Kirkpatrick training (reaction, learning, behaviour and results) and intention to transfer learning, and the key training characteristics that influence them.	Chapter 2(Literature review)
2	To examine the effect of training characteristics (pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, training objectives) on expectations of the training environment, expectation of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results.	Chapter 5 (Results) and 6 (Discussion)
4	To investigate the moderating impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content, training objectives) on the relationship between reaction, learning, intention to transfer learning, behaviour and results.	Chapter 5 (Results) and 6 (Discussion)
4	To develop a conceptual framework and related set of hypotheses that defines the impact of training characteristics on training effectiveness in national oil and gas companies.	Chapter 3 (Conceptual framework) and 5

		(Research methodology)
5	To provide recommendations and suggestions for maximising training effectiveness in practice and contribute to the existing literature.	Chapter 7 (Conclusion and recommendations)

Objective 1

To identify four Kirkpatrick training (reaction, learning, behaviour and results) and intention to transfer learning, and the key training characteristics that influence them.

Chapter 2 reviewed of the literature and highlighted the need for research. It highlighted the significance of training and training evaluation. Additionally, it provided related information on Kirkpatrick's four levels training evaluation model, its criticisms and other training evaluation models. It highlighted the failure of Kirkpatrick's four levels, namely reaction, learning, behaviour and results for account to individual and contextual factors. Level 1 (reactions) is concerned with the feelings and attitudes of participants. Level 2 (learning) assesses the degree of learners' acquisition of knowledge and skills. Level 3 (behaviours) focuses on the extent to which training is applied by learners when they go back to their work. Level 4 (results) measures the impact of training on an organisation's overall performance. It is also found from the literature that there are a number of calls to further investigate the impact of training characteristics on training effectiveness before and after training, and their moderating impact on the relationship between the four levels of Kirkpatrick's model. Therefore, this study observed this need and proposed a conceptual framework that highlighted the indicators that influence expectations for training characteristics, expectations for training outcomes and training outcomes (reaction, learning, intention to transfer learning, behaviour and results), pre and post training.

Objective 2

To examine the effect of training characteristics (pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, training objectives) on expectations of the training environment, expectation of trainer performance and behaviour, expectations for training outcomes, reaction, learning, intention to transfer learning, behaviour and results.

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Objective 3

To investigate the moderating impact of training characteristics (training environment, training methods, trainer performance and behaviour, training content, training objectives) on the relationship between reaction, learning, intention to transfer learning, behaviour and results.

The intention to transfer learning is defined as “the trainees’ intention to engage in specific behaviour that would facilitate transfer of their skills” (Bansal and Thakur, 2013, p. 56).

Chapter 5 presented the results of the data gathering that aimed to test the conceptual framework based on the chosen methodology. It provided the results of three survey questionnaires for descriptive analysis, reliability and validity tests, and results of confirmatory factor analysis and structural model fit to validate the conceptual framework and to test the hypothesised relationships. The data demonstrated that how the models were a good fit of all three surveys by means confirmatory factor analysis, and that their SEM was well above the required criteria.

Chapter 6 discussed the findings that were presented in chapter 5. The findings of the data analysis and hypotheses testing for the final model, Survey 1 (before training), Survey 2 (immediately after training) and Survey 3 (2–3 three months after training) were evaluated. It was found that not all the independent predictor variables were positively and significantly correlated to the dependent variables.

Objective 4

To develop a conceptual framework and related set of hypotheses that defines the impact of training characteristics on training effectiveness in national oil and gas companies.

Chapter 3 of this study presented a conceptual framework of the evaluation of impact of training characteristics, e.i. pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, and training objectives on expectations of the training environment, expectations of trainer performance and behaviour, expectations for training outcomes and training outcomes (reaction, learning, intention to transfer learning, behaviour and results). 30 hypotheses were presented with presented along with their drawing on the extant literature.

Chapter 4 provided a justification of the chosen research philosophy, research approach, and research design and sample type. It highlighted that the data for this study were collected in three stages: before, immediately after and 2–3 three months after training. It also highlighted that the sample included 406 employees in the ‘before training’ stage, 402 immediately after the training and 391 2–3 months after the training. All of the participants were employees from different levels who participated in health and safety training provided by national oil and gas companies in Oman. It highlighted that the Statistical Package for the Social Sciences (SPSS) V.20 software was used for descriptive analysis, reliability and validity test and AMOS V.21 was used to validate the conceptual framework of research and to test the hypothesised relationships.

Objective 5

To provide recommendations and suggestions for maximising training effectiveness in practice and contribute to the existing literature.

Chapter 7 concluded the research by revisiting the aim and objectives of the study, research questions and research gaps. The research findings are presented and, the theoretical, methodological and practical implication of the proposed conceptual model set out. Limitations and recommendation for future work are made.

7.2 Research Gaps

A gap exists in the extant literature because past research has focused mainly on evaluating training outcomes at the end of the training programme. Little empirical work has measured training outcomes pre-test and post-test (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). This highlights the need for further empirical research. Consequently, this research was conducted pre-training, immediately after training and 2–3 months after training.

Even though previous studies have investigated post-training evaluations, they have focused on the effects of training characteristics. Furthermore, they have looked at Kirkpatrick’s four levels (reactions, learning, behaviours and results) either individually or in terms of the relationship between two discrete levels. Little empirical work has explored the impact of training characteristics factors on training effectiveness (Aluko and Shonubi, 2014; Bates, 2004; Homklin et al., 2013). Therefore, further empirical research is needed to provide a better understanding of the impact of training characteristics on training effectiveness. Consequently, this research seeks to examine the moderating variables of training characteristics, as well as their subsequent impacts on training outcomes: reaction, learning, intention to transfer learning, behaviour and results.

Furthermore, after reviewing the related studies and research on training and development, human resources development and training evaluation, the study identified some other significant gaps in the literature. The other gap is the shortage of comprehensive research, and thorough investigations and analysis on the effects of training characteristics on the transfer of learning. It is true that there is an increasing focus on the transfer of learning, but there is a lack of research exploring the effects of individuals, training design and work environment factors on the transfer of learning to help understand how to overcome this problem (Homklin et al., 2014; Giangreco et al., 2009; Iqbal et al., 2011; Salas and Cannon-Bowers, 2001).

Furthermore, there tends to be a gap between what authors suggest and what is actually practised in business. Although it has been proposed that more research be done on how to conduct training evaluations successfully, few empirical studies have examined this topic. Most research indicates that trainee reaction is the common criterion used by organisations to measure and evaluate the effectiveness of training, but few empirical researchers have investigated training evaluation at the reaction level (Alliger and Janak, 1989; Arthur et al., 2003a; Powell and Yalcin, 2010).

Moreover, there is a gap in the literature regarding the assumption that Kirkpatrick's four levels are somehow linked. A review of the literature indicates that little research validates this assumption (Alliger and Janak, 1989; Kirkpatrick, 1996; Kirkpatrick and Kirkpatrick, 2006).This highlights the need for more empirical studiesto confirm or deny this assumption (Bates, 2004; Santos and Stuart, 2003). Thus, this study investigates the links between the four training outcomes.

Moreover, previous studies have indicated that most Arab countries, including Gulf countries, have difficulties with evaluating training (Al-Sayyed, 2014; Abdalla and Al-Homoud, 1995; Abdalla et al., 1998; Al-Athari and Zairi, 2002; Al-Fathaly and Chakerian, 1983; Al-Tayeb, 1986; Atiyyah, 1991; Bahar et al., 1996; Hung, 2010). This highlights the need for more research to overcome training evaluation obstacles in Arab countries.

Finally, despite the large number of studies on training evaluation, little research has been conducted in Arab countries, including oil and gas regions, such as Oman (Budhwar and Debrah, 2001; Al-Hamadi et al., 2007). To date, a limited number of studies have investigated this issue within the context of Arab countries in general and especially in the Sultanate of Oman. Hence, this research seeks to evaluate the effect of training characteristics on training effectiveness in the Omani national oil and gas industry, specifically in health and safety training.

7.3 Research findings

This research proposed a conceptual model in chapter 3 based on the literature review in chapter 2. The main focus of the conceptual model was to provide the answer to the two research questions proposed in chapter 1 introduction section 1.8. The conceptual model was validated through three survey questionnaires were distributed to 800 employees for each survey in the national oil and gas companies in Oman. Based on the two research questions, the main findings of the three surveys of this study are as follows:

Q1-What are the effects and moderating roles of training characteristics (i.e., pre-training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content, and training objectives) on the relationships between training outcomes (reaction, learning, intention to transfer learning, behaviour, and results), and on expectations for training characteristics and expectations for training outcomes during three separate time periods (before, immediately after, and 2–3 months after training)?

7.3.1 Findings of Survey 1 (before training)

Data analysis and hypotheses testing of the final model based on Survey 1 revealed that pre-training interventions and activities had a significant and positive effect on expectations of trainer performance and behaviour ($t= 4.379$, $p=.001 \leq .001$) as well as on expectations of the training environment ($t=10.400$, $p=.001 \leq .001$). Pre-training intervention refers to activities or materials that are identified before a training or practice session begins to develop the potential for learning and transfer learning, as well as the efficiency and effectiveness of practice during training (Tannenbaum and Yukl, 1992; Mesmer-Magnus and Viswesvaran, 2010). However, pre-training interventions and activities had an insignificant effect on expectations for the training outcomes ($t=-2.198$, $p=.028 \leq .05$). Meanwhile, the results of this study indicate that trainee readiness had a significant and positive impact on expectations for the training outcomes ($t=3.435$, $p=.001 \leq .001$). Trainee readiness refers to "the extent to which individuals are prepared to enter and participate in training" (Holton, 2005, p. 45). Further, trainee readiness had an insignificant effect on expectations for the training environment ($t=-3.065$, $p=.002 \leq 0.01$) and on expectations of trainer performance and behaviour ($t=-3.344$, $p=.001 \leq .001$). Pre-training interventions and activities were the strongest factors contributing to expectations of the training environment ($\beta=.536$), as well as expectations of trainer performance and behaviour ($\beta=.166$). Meanwhile, trainee readiness was the strongest factor contributing to expectations for the training outcomes ($\beta=.176$).

7.3.2 Findings of Survey 2 (immediately after training)

Data analysis and hypotheses testing of the final model based on Survey 2 showed that the relationship between trainee reaction and learning was significant and positive ($t=2.643$, $p=.008 \leq 0.01$) while, learning did not have a direct significant effect on intention to transfer learning ($t=.146$, $p=.884 \leq .05$). Trainee reaction represents the affective and attitudinal responses of learners to instructional programmes (Arthur et al. (2003a). The learning is defined as "the extent to which the learners gain knowledge and skills" (Kunche et al., 2011, p.3). Reaction was only predicted significantly and positively by trainer performance and behaviour ($t=1.995$, $p=.046 \leq .05$) but the training environment and training methods had no direct significant effect on reaction ($t=.488$, p=.625≤ .05, t=.068, p=.303 ≤ .05 respectively). The training envirment is referred as an area or place where a training programme is conducted (Charney and Conway, 2005). Training methods are the means and instruments for delivering a training programme in order to accomplish the training objectives (Dean, 1994). The trainer is defined as the person who is responsible for conveying the training objectives to the trainees and plays an important role in achieving efficacy within the training programme (Latif, 2012). Learning was influenced significantly and positively by training characteristics, such as the training environment (t=2.391, p=.017≤ .05), and trainer performance and behaviour (t=2.026, p=.043≤ .05) but the training methods had no direct significant effect on learning (t=.040, p=.968 > .05). Intention to transfer learning was not affected by any of the training characteristics, such as the training environment, training methods and trainer performance and behaviour (t=-0.360, p= .719, t=.376, p=.707, t=.112, p=.557 > .05 respectively). None of the training characteristics (e.g., training environment, training methods, and trainer performance and behaviour) had a moderating effect on the relationship between reaction and learning (β = 0.001, β = 0.023 and β = -0.009, respectively; p > 0.05), or between learning and intention to transfer learning (β= -0.010, β= -0.004 and β= - 0.019, respectively; p > 0.05). This study showed that trainer performance and behaviour were the strongest factors contributing to trainee reaction (β =.137) and the training environment (followed by trainer performance and behaviour) was the strongest factor supporting learning (β =0.148, β= 0.129, respectively).

7.3.3 Findings of Survey 3 (2–3 months after training)

The results from the data analysis and hypotheses testing of the final model in Survey 3 indicated that behaviour of trainees significantly and positively predicted results (t=2.117, p=.034 ≤ .05). Behaviour is defined as the "capability to perform the learned skills while on the job" (Kunche et al., 2011, p. 3). Results are defined as "the effect on the business or environment resulting from the improved performance of the trainee" (Topno, 2012, p. 20). While the training content and training objectives predicted behaviour significantly and positively (t=2.730, p=.006 ≤.01, t=2.908, p=.004 ≤.01 respectively) neither had a significant or direct effect on results (t=.869, p=.385, t=1.765, p= .078 > .05). Training content is described as training materials, such as manuals, hand-outs, notes, etc. (Carliner, 2003; Charney and Conway, 2005). None of the training characteristics (e.g., training content and training objectives) had a moderating effect on the relationship between behaviour and results (β= -0.041, t= -.292, β= 0.144 and t= 0.816, respectively; p > 0.05). This study showed that training objectives (followed by training content) was the strongest factor affecting behaviour or behavioural change (β=.169, β=.159, respectively; p≤.01).

Q2-What lessons can be drawn from the application of this approach to the Omani national oil and gas industry's health and safety training?

Several lessons were learned by applying this approach to health and safety training in the national oil and gas companies in Oman, as follow.

Lessons learned before training

This study found a significant and positive relationship between pre-training interventions and activities, and expectations of trainer performance and behaviour ($t= 4.379$, $p=.001 \leq .001$) as well as expectations of the training environment ($t=10.400$, $p=.001 \leq .001$). Thus, pre- training intervention and activities may result in more optimistic expectations from the trainees; it did help the trainees to set realistic expectations about the training outcomes and its characteristics before training began.

This study showed a significant and positive relationship between trainee readiness and expectations for the training outcomes ($t=3.435$, $p=.001 \leq .001$). Hence, it is important to prepare trainees before the training begins by involving them in a training assessment and providing them with the necessary information about the training. Further, helping them to identify the required training goals is critical to achieving the training outcomes and overcoming difficulties during training.

This study found that pre-training interventions and activities were the strongest factors contributing to expectations of the training environment ($\beta=.536$), as well as expectations of trainer performance and behaviour ($\beta=.166$). Meanwhile, trainee readiness most strongly supported positive expectations for the training outcomes ($\beta=.176$). Thus, training professionals and organisations should prepare trainees before the training begins, and provide pre-intervention practices and activities for trainees as they contribute positively to training success.

Lessons learned post training

This study revealed the significant and positive relationship between reaction and learning ($t=2.643$, $p=.008 \leq 0.01$), which emphasises that a positive training experience for trainees had a positive influence on acquired skills and knowledge.

This study indicated that reaction was significantly and positively influenced only by trainer performance and behaviour ($t=1.995$, $p=.046 \leq .05$). This study found that learning was significantly and positively influenced by training environment ($t=2.391$, $p=.017 \leq .05$), and trainer performance and behaviour ($t=2.026$, $p=.043 \leq .05$). This research also revealed that trainer performance and behaviour were the strongest factors contributing to reaction ($\beta =.137$) and the training environment (followed by trainer performance and behaviour) were the strongest factors supporting learning (β

=0.148, β= 0.129, respectively; ≤ .05). These results provide practitioners with a set of training characteristics that they can invest in to achieve the desired results, as perceived by the trainees.

This study indicated the significant and positive relationship between behaviour and results (t=2.117, p=.034 ≤ .05). The training content and training objectives had a significant and positive relationship with behaviour (t=2.730, p=.006 ≤.01, t=2.908, p=.004 ≤.01, respectively). Thus, training professionals and organisations should invest more money and effort into the training characteristics that contribute to successful training.

7.4 Theoretical implications

The theoretical contribution of this study can be summarised as follows.

Theoretically, the study has contributed to the field of training evaluation by developing a theoretical framework that examined the impact of training characteristics on training effectiveness in the national oil and gas industry in Oman before and after training was completed.

This research served as a significant comparison between the effects of training characteristics on training effectiveness, and between the research context, and other well-researched contexts, particularly in the west.

Few studies have concentrated on evaluating the impact of training characteristics on training outcomes before and after training, which are assumed important in several contexts, such as the oil and gas industry in Oman. This study also has contributed to the literature empirically by providing a novel contribution to the subject of training evaluation in Arab countries, such as Oman.

Previous research on training evaluations has focused on evaluating training outcomes after training is complete (post-test only) (Pineda, 2010; Warr et al., 1999). However, measuring training outcomes by administering tests before and after training have suggested (Tannenbaum and Yukl, 1992; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Salas and Cannon-Bowers, 2001; Warr et al., 1999). This study has contributed to the literature empirically by conducting this study at three separate times: before, immediately after and 2–3 months after training. Several theoretical contributions that also emerged from this research are detailed into two points as below.

Pre-training stage contributions

This study has contributed to the literature empirically by showing that pre-training interventions and activities were the strongest factor contributing to expectations for the training environment, as well as to expectations for trainer performance and behaviour. Meanwhile, trainee readiness was the strongest factor contributing to expectations for the training outcomes.

Post training stage contributions

Previous studies have investigated the meditating effects of training characteristics on the relationships between reaction, learning, behaviour and results (e.g. Iqbal et al., 2011). Therefore, an investigation on the moderating effects of training characteristics is necessary (Homkiln et al., 2013). This study has contributed to the literature by empirically investigating the moderating effects of training characteristics on the relationship between reaction, learning, intention to transfer learning, behaviour and results.

Many studies have focused on the effects of training characteristics after a training programme has been completed and they have looked at the four levels (reactions, learning, behaviours and results) either individually or in terms of the relationship between two discrete levels (Baldwin and Ford, 1988; Bates et al., 2007; Ghosh et al., 2011; Iqbal et al., 2011). This study has contributed to the literature empirically by evaluating the effects of training characteristics on reaction, learning, intention to transfer learning, behaviour and results.

Although there are assumed links between the four levels of Kirkpatrick's model (Hung, 2010; Kirkpatrick, 1996), few studies have confirmed this correlation (Alliger et al., 1997; Alliger and Janak, 1989; Santos and Stuart, 2003). This study has contributed to the literature by the development of Kirkpatrick's four-level model by expanding our understanding of the progressive, causal relationships between reaction and learning, and between behaviour and results.

Most previous research has indicated that trainee reaction was the common criterions used by organisations to measure and evaluate the effectiveness of training, but few studies have examined training evaluation at the reaction level (Alliger and Janak, 1989; Arthur et al., 2003a). This study has contributed to the literature empirically by investigating the impact of training environment, training methods and trainer performance and behaviour on the reaction level.

Although previous work has indicated that trainer performance and behaviour were the strongest factors affecting the transfer of knowledge to the workplace (e.g. Nikandrou et al., 2009), this study has contributed to the literature by showing that trainer performance and behaviour was the strongest factor contributing to reaction. Furthermore, the training environment (followed by trainer performance and behaviour) were the strongest factors supporting learning.

Previous studies have indicated that training content was the strongest factor affecting the transfer of knowledge to the workplace (e.g. Bates et al., 2007; Lim and Johnson, 2002). This study has contributed to the literature by showing that training objectives (followed by training content) was the strongest factors affecting behaviour.

7.5. Practical implications

The findings of this research provide meaningful and practical implications for instructors, training designers, managers and supervisors when creating effective training programmes. The results of this study suggest that the strongest significant relationships between training outcomes (reaction and learning and, between behaviour and results) will not always support the idea that training characteristics (training environment, training methods, trainer performance and behaviour, training content and training objectives) have a moderating effect on those relationships.

Moreover, this study highlights the training characteristics that have the potential to affect training outcomes. Thus, understanding the effect of training characteristics would better equip instructors, training designers, managers and supervisors to create effective training programmes that are designed and delivered properly.

Furthermore, the current study is critical for training designers and instructors to develop appropriate training characteristics that are relevant to health and safety training programmes for employees in the oil and gas industry, as well as other industries.

The results suggested that pre-training interventions and activities were the strongest factors contributing to expectations of the training environment, as well as expectations of trainer performance and behaviour. Meanwhile, trainee readiness most strongly supported positive expectations for the training outcomes. Therefore, training professionals should support trainees with essential activities, and prepare them before starting training programme in order to improve their expectations for training outcomes and their expectations for the training characteristics, which would encourage them to learn during the training programme.

Moreover, this study provides practitioners with a set of training characteristics that they can invest in to achieve the desired results, as perceived by the trainees. The results of this study suggested that trainer performance and behaviour was the strongest factor contributing to reaction, and training environment (followed by trainer performance and behaviour) were the strongest factors supporting learning. Thus, training professionals and organisations should invest more money and effort into the training characteristics that contribute to successful training.

Furthermore, the results of this study revealed that training content (followed by training objectives) was the strongest factor contributing to behaviour. Therefore, training professionals and organisations should invest more money and effort into preparing training content and setting appropriate training objectives that supports applied learning and transfer of knowledge to the workplace.

The three stages used in this research suggested that training evaluation was an on-going process. Training professionals and organisations, therefore, should perform training evaluations before, during and after training to achieve the desired outcomes.

Successful training

Based on the findings of this research, suggestions for successful training are summarised in Table 7.3.

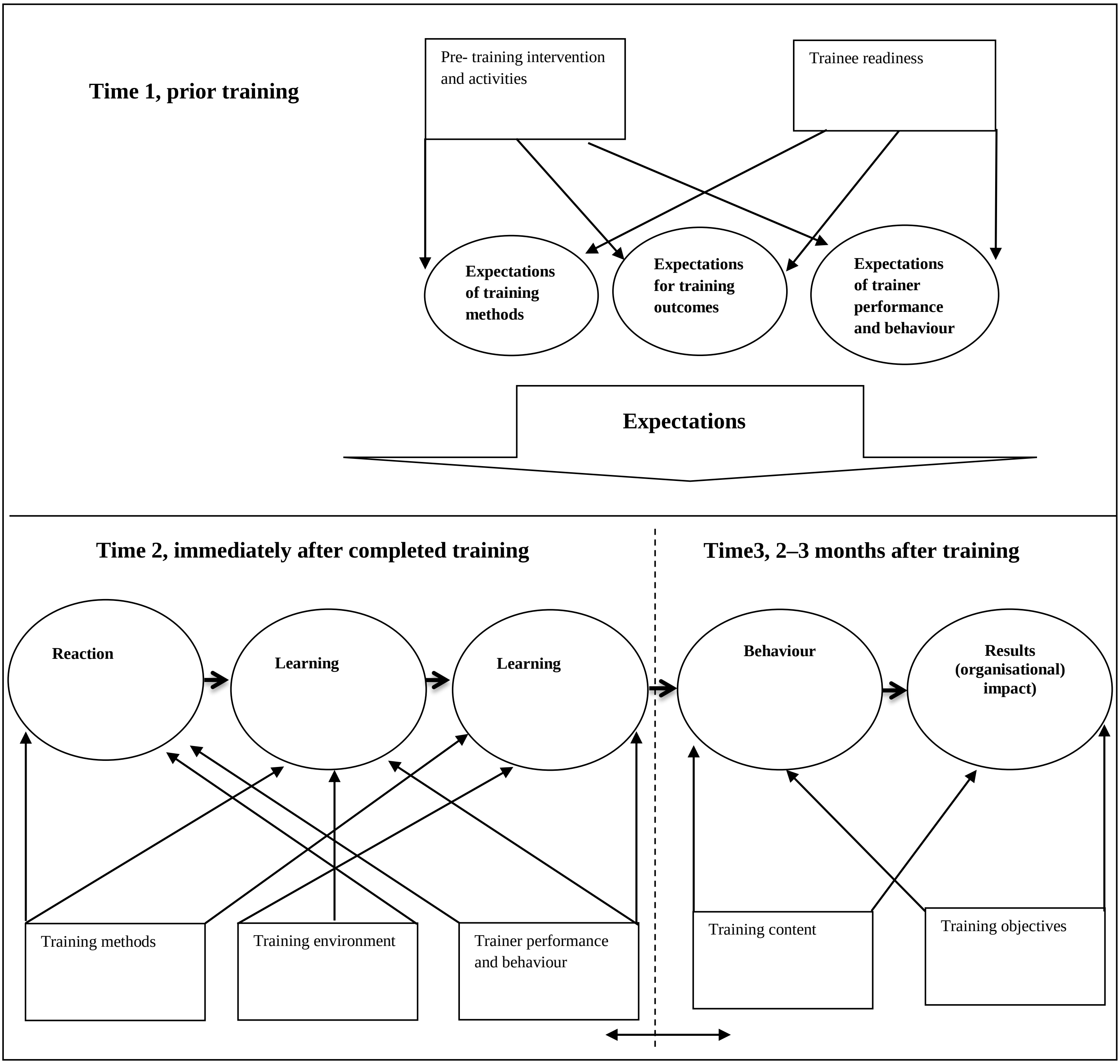
Table 7.3 Suggestions for successful training

	Suggestions
1	Trainees should be prepared before training begins and provided with pre-intervention training practices and activities that positively contribute towards making training a success.
2	Trainees should be prepared before training begins by being involved in a training assessment and provided with the necessary information about the training.
3	The required training goals for trainees to achieve the training outcomes and overcome difficulties during training should be identified
4	More money and effort should be invested into trainer performance and behaviour, and the training environment that contributes towards successful of training.
5	The appropriateness of the training environment and training methods for the training programme should be considered.
6	More money and effort should be invested into preparing training content that supports applied learning and the transfer of knowledge to the workplace.
7	A measurement of a training programme should be performed prior, during, immediately after, and a few months after training which emphasises training evaluation to all processes of training in order to respond to participant need, to identify the extent of their training experience, to measure acquisition of knowledge and skills, and to enhance the transfer of learning.

The revised framework for the practice of evaluating training effectiveness

Based on findings of this empirical study, it can be argued that the Omani national oil and gas compnies should includ these three stages adopted by this research in its evaluations of health and safety training i.e. before, immediately after and 2-3 months after training. As discussed above, an analytical framework was created to evaluate the effectiveness of health and safety training for national oil and gas employees in Oman. This framework provides a more holistic understanding of the key constructs that ensure the effectiveness of training. As shown in Figure 7.1, the framework suggests that the evaluation of training effectiveness is affected by seven sets of training characteristics: pre- training intervention and practices, trainee readiness, the training environment, training methods, trainer performance and behaviour, training content, and training objectives. This study confirms that evaluations of training effectiveness would be more effective if the framework in Figure 7.1 were used because it is expected to support improved training evaluation in the national oil and gas companies in Oman. Also, the Omani national oil and gas industry will be able to use these evaluations to improve training in the future, as well as identify employee knowledge, skills and abilities that can be used in future training design and planning.

Figure 7.1 The revised framework for the practice of evaluating training effectiveness of health and safety at Omani oil and gas companies.



7.6 Methodological implications

Broadly speaking, all of the scales appeared to be valid in terms of their general content, but the number of purified items was not the same as those in the original scales. For example, expectations for training outcomes, which consisted of eight items, were purified to five items and were found to be highly reliable. Similarly, some items related to training environment, trainer performance and behaviour, reaction and behaviour were purified. On the other hand, several scales, such as trainee readiness, expectations for trainer performance and behaviour, expectations for training environment, learning and training objectives, were simplified to their basic items because each of them consisted of less than or equal to three items. The scale provides a valid and reliable measure of training characteristics, expectations of training characteristics, and expectations of and training outcomes within the research context.

Moreover, this study supported existing research on multidimensionality of the reaction construct (e.g.Morgan and Casper, 2000; Tan et al., 2003). Further, the study measured the satisfaction, difficulty, and relevance of training as demisions to measure reaction construct. The finding showed that multidimensionality of the reaction construct was significantly related to trainee learning. Another methodological contribution is the use of a longitudinal design to establish cause-and-effect relationships among the variables of interest. A longitudinal study using questionnaires was conducted to gather data on the same participants at three separate times: before, immediately after and 2–3 months after training. A longitudinal study is more helpful when testing causality because it can track changes over time and observes medium- to long-terms trends (Blumberg et al., 2011; Remeny et al., 1998). Thus, a longitudinal design for this study is useful to understand the relationships between training characteristics and training outcomes before and after training is completed.

This is one of few studies to examine training characteristics of variables outside the western context, especially in Arab countries, such as Oman. This study fills this research gap by exploring predictor variables in Arab workplaces that may be useful for generalising these predictors. Examining the predictor variables in Oman could provide additional insights into the extant literature because the Arabian Gulf region, and especially Oman, has a unique culture (Moideenkutty et al., 2011) that is substantially different from western countries. The study's findings showed that training characteristics were critical to accomplish training effectiveness and could develop in a similar way in non-western countries.

Moreover, this study supported existing research on relevant measurement scales in different countries. For example trainer performance, training environment, training goals, training content and training materials were tested for their effects on learning and training usefulness in Greek organisations (Diamantidis and Chatzoglou, 2012). Furthermore, Ghosh et al. (2011) examined the effects of the trainer's clarity, venue, other facilities, food served, practical applications and communication of the trainer on trainees' reactions in India.

7.7 Research limitations

7.7.1 Theoretical limitations

This study has certain limitations that are worth noting and should be addressed in future research. First, this study only tests the effects of training characteristics on training outcomes in the national oil and gas industry, and specifically health and safety training, which may limit generalisability. It is possible that the predictor variables will be different in organisations that are outside the national oil and gas industry, specifically health and safety training. Therefore, the predictor variables in the theoretical framework should be examined in other organisations that hold different training programmes in the same culture or other, which may present confounding influence on those organisations. Thus, further tests are necessary to strengthen the generalizability of the theoretical framework.

Second, this study only tests the effects of training characteristics such as pre- training intervention and activities, trainee readiness, training environment, training methods, trainer performance and behaviour, training content and training objectives on training outcomes. Therefore, further research could examine the effects of other training characteristics such as training leadership.

The other limitation of this research is that it did not consider the effects of other factors, such as individual characteristics and environmental factors, on training outcomes. Future research could examine the evaluation effects of these factors on training outcomes.

7.7.2 Methodological limitations

The research design used in this research is not without certain methodological limitations that should be noted. First, the data were only collected from individuals who participated in the training. Whenever possible, measurements should be taken from multiple sources, including trainees and their supervisors. In addition, it is reasonable to perform evaluations that include a control or comparison group that has not received the training (Ban and Faerman, 1990). The self-assessment measures may have caused some common-method variance that might have inflated the observed relationships between the variables in this study. Therefore, further studies could use multiple sources, such as supervisors.

The second limitation of this study is related to the self-administered questionnaire method to examine the proposed conceptual framework. There might be problems relating to data that were obtained from a single source for causal prediction based on the survey, since the measures were taken at different periods. This limitation suggests that in-depth interviews with participants, in addition to quantitative data, would be helpful. Therefore, multiple methods may be helpful to clarify findings.

The third limitation is that the data were collected using a self-administered questionnaire because they were self-reported by the respondent, which may have created reliability and validity issues and may have produced high correlations between the measures because the data showed common method variance; therefore, the errors in the measurements were correlated with each other (Park and Kim, 2009).

Fourth, the research analyses were based on the effects of training characteristics on training outcomes in the Omani oil and gas industry, thus limiting the generalizability of the research (Cole et al., 2006). It is unclear whether the same pattern would occur in national oil and gas companies in other cultures and whether the results obtained from this sample would apply to other populations due to cultural differences. Future research could examine the cross-cultural aspects of this topic to determine the extent to which these results are country-specific or can be explored in other, industries, training areas and countries.

Fifth, this research uses convenience sampling technique. However, the knowledge gained from using convenience sampl is unwarranted representative of the general population from which the sample was drawn because opportunity to participate is not equal for all qualified members in the target population (Etikan et al., 2016; Pruchno et al., 2008). Although the convenience method using larger samples in this research, and it was statistically found that the sample characteristics satisfied the required criteria for the target population, the generalisation of the reslts study should be treated with caution beyond the scope of this design. Thus, indvidual should make such generalizations cautiously in research studies using convenience methods (Pruchno et al., 2008). The generalisability of results from such samples to the comparable broader population could be judged to be relatively good depending on the extent to which the focus of the research results in recruitment of volunteers with particular characteristics (Hultsch et al., 2002). Future critial reserch is needed to demonstrate that these study results are not unique to this particular sample.

The other limitation is the different period over which level 2 “learning” was measured. This is because this research investigated learning immediately after training was completed. Although there is no clear rule about when to measure learning, prior research has evaluated the learning at several periods, before, during and after training (e.g. Pienda, 2010). Evaluating the amount of learning gained by trainees would be before and after training (Basarab Sr and Root, 1992, Indira, 2008; Kirkpatrick, 1996).

The final difficulty involved the different times at which the transfer of learning was measured. This study examined the transfer of learning 2–3 months after training was completed from a single source. Moreover, the training programme was measured at three separate periods. Although there is no clear rule about when to measure the transfer of learning, prior research has measured the transfer at several times, such as one, three or six months after training. A good strategy for assessing the transfer of learning following training is possibly to include both short- and long-term measurements (Gaudine and Saks, 2004).

The limitations of this study do not reduce the importance of the results. The above points are simply mentioned in order to direct future research that could support greater improvement in this area. The following section discusses the implications for future research.

7.8 Future research opportunities

There are several opportunities for future research. This study examined the direct relationships between the independent variables, including, training environment, training methods, trainer performance and behaviour, training content and training objectives, and reaction, learning, intention to transfer learning, behaviour and results. It also examined independent variables, including, pre-training interventions and activities, trainee readiness on expectations of the training environment, expectations of trainer performance and behaviour, expectations for training outcomes. One of the key issues for future research is to investigate more sophisticated relationships between the antecedents and the training outcomes. In this regard, future research could further develop a theoretical model concerning the evaluation of training effectiveness for different types of predictor relationships. This study investigated the direct relationships between varieties of antecedents of training characteristics, as well as training outcomes and expectations for training characteristics and its expectations for outcomes. Nevertheless, it is logical to assume that more complicated relationships may exist.

Furthermore, the conceptual framework developed for this study should be tested in other types of organisations and multinational corporations, as well as private oil and gas companies, in order to improve generalisability. It is possible that people who are employed in organisations other than oil and gas companies will react differently. Therefore, these predictor variables should be investigated in other organisations in the same context of this study, which may present confounding effects. Additionally, future research could develop a theoretical model for different training characteristics, such as training leadership.

This study examined the transfer of knowledge to the workplace 2–3 months after training was completed. Further research that examines the transfer of learning six months or one year after training is recommended. In-depth interviews, along with a questionnaire, are also recommended to provide more information about the antecedents of training characteristics. Thus, more studies are required to better understand the antecedents of training characteristics and evaluation their effects on training effectiveness.

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Appendix A

Human resource development in Oman

Human resources continue to progress in Oman due to higher levels of education, encouragement the participation of women in the labour market and increasing number of workers who participate in the economy. The Eighth Five Year plan (2011–2015) allocated 130 million riyals (approx. US$ 330 million) to scholarships (Rajasekar and Khan, 2013). These grants were intended to help the Omani people become qualified to play important roles in the development of their country (Rajasekar and Khan, 2013). While the country continues to experience declining oil revenues, the Omani government is committed to improving the skills of the population and investing in youth. Therefore, the education authorities are moving forward with reforms focused on improving quality and strategic learning objectives to meet the demands of the labour market (Oxford Business School, 2017).

The Omani government has set aside up to $260 million for human resource development programmes (Rajasekar and Khan, 2013). This is a relatively large sum of money, and it signals the goodwill of political leaders to invest in citizens. In fact, plans are underway to invest more money in this field if necessary. As Oprescu (2011) explains, Oman would rather raise the quality of its workers than its neighbours, and this can only be achieved by allocating the highest amount of resources to the education sector.

Oman is a good example of a country that has used its resources to meet the needs of its citizens and continues to develop itself by creating a better education system. Before 2000, the government of Oman was responsible for providing both secondary and college education until the privatisation of higher education began. Since those who graduated from higher education needed to be involved in the workforce, the Omani government made an effort to educate young Omanis through so-called "Omanisation," as stated by Budhwar et al. (Rajasekar and Khan, 2013). This refers to human resource planning and training in Oman for the local workforce and providing training and development to Omanis (Rajasekar and Khan, 2013), as well as a formal employment preference for local residents (Khan, 2010).

The Omani government outlined its commitment to development programmes in a document called Vision 2020 (Al-Lamki, 2000; Budhwar et al., 2002; Al-Hamadi et al., 2007; Rajasekar and Khan, 2013), which considers the need for employee development and effective management of talent. Vision 2020 was announced in 1995 and implementation began in 1996 with an aim to achieve a diverse, dynamic and globalised economy supported by the operation of an efficient and competitive private sector (Al-Hamadi et al., 2007). Al-Hamadi et al. (2007) summarise the objective of the 2020 Vision as developing human resoruce and the capabilities of the Omani people to generate and manage technological changes efficiently. Since the key to economic growth is a literate nation, this vision aims to develop the skills, abilities and knowledge of the local people so they can face the challenges of the 21st century (Al-Hamadi et al., 2007).

Al-Lamki (2000) argues that Vision 2020 is necessary because Oman needs a competent and efficient workforce in order to reduce its dependence on oil resources and foreign workers. The execution of a successful privatisation programme, industrialisation and technological innovation will also help to make Oman more competitive in the global market. Contrary to Al-Lamki's view of Vision 2020, studies by Al-Ghorfa (1998), Al-Lamki (1998), Al-Maskiry (1992) and Eickelman (1991) point out the obstacles facing the implementation of this plan. For instance, coordination is missing between the government and the private sector. At the beginning of the 1970s, private companies are searching for skilled workers but the supply of skilled workers did not meet the demand of the labour market. The public is also unaware of important job opportunities in the private sector because they assume these jobs will result in lower salaries, longer work hours and fewer holidays. Moreover, employers refuse to recruit unqualified people, assuming that Omani people are more expensive and lack English language skills (Al-Lamki, 2000). To meet this challenge, the Omanisation policy requires private sector companies to meet quotas for employing native Omani workers even though such a requirement distorts the labour market (Oprescu, 2011).

The government plans to empower young Omani citizens through a five-year training programme (Thomaskutty, 2010). Al-Lamki (2000) suggests that human resource development is also prioritised throughout the Sultanate of Oman's successive Five Year Development Plan, while Rajasekar and Khan (2013) state that a major investment in the country's HRD programme was declared in the Eighth Five Year Plan (2011–2015). On other hand, Al-Lamki's (2000) empirical study shows that the holistic and coordinated efforts of all stakeholders plays an integral role in the successful realisation of Omanisation. Therefore, she suggests a holistic framework that includes the responsibilities of everyone involved in the implementation of the Omanisation plan. The following section provides more information on this plan.

Omanisation

There are more than 17 million foreign workers in the Gulf Cooperation Council (GCC) countries: 4 million in the UAE, 1.1 million in Qatar, 1.5 million in Kuwait, 9 million in Saudi Arabia, 900,000 in Oman and 500,000 in Bahrain (Daily Sabah, 2016). The number of expatriates in Oman is relatively low compared to other GCC countries, aside from Bahrain. However, because there are a high number of foreigners in the other GCC countries, the countries have decided to reduce them and Oman set up the Omanisation strategy to employ more Omani citizens. This policy puts certain restrictions on organisations for a certain amount time but this varies from sector to sector. In 2020, the rate of

Omanisation should add $19.8bn to GDP, around 25% (Scott-Jackson et al., 2014). Firms argue that this strategy limits their competitive advantage in the global market (Khan, 2011).

Omanisation is meant to enhance the training and development of citizens. It aims to increase the number of qualified local people who can work in the public and private sectors. The goal of this strategy is to increase the number of Omani employees in the public sector and encourage local people to work in the private sector because young people generally prefer to work for public organisations (Al-Hamadi et al., 2007). Therefore, some efforts have been made to apply the Omanisation strategy to the public and private sector by giving opportunities to Omani citizens that would otherwise go to foreign workers without negatively affecting job or organisational performance. Despite achieving of good results from Omanisation within the public sector (Valeri , 2005), the private sector face some challenges involving Omani nationals in the private sector. Valeri (2005) and Scott-Jackson et al., (2014) argue that young Omanis are not prepared to live with a minimum wage between sixty to ninety rials per month, younger Omanis view jobs in public sector as more secure, easier and more desirable, private sector companies perceive that expatriate resources are cheaper, more committed and easier to manage, and many expatriates occupy roles that are strategic (e.g. leadership or critical knowledge areas).

To implement the Omanisation of the oil and gas industry, a new community was established by ministerial decree in 2001 called the Oman Society for Petroleum Services (OPAL). OPAL has in the last eleven years facilitated the training and employment of some 9,000 Omanis (OPAL, 2017). Khan (2007) argues that oil and gas companies acknowledge Omanisation because of government pressure and accomplish the minimum targets to get labour clearance, but they still lack good employment policies. Furthermore, these companies usually offer payment structures rather than minimum statutory salaries. Moreover, payment is not linked to individual abilities, skills or knowledge, and they do not appear to re-train Omani nationals to update their skills or motivate them to develop. Moreover, these companies view local human resource policy as a liability rather than a valued asset that can generate financial benefits for the organisations. Therefore, investment in training and development for local people is the sole responsibility of the government. In addition, budgets to develop local human resource are rare, and corporate visions do not include investments in the development of national employees (Khan, 2011). Further, Scott-Jackson et al., (2014) found that a number of factors that are reducing the limiting on the numbers of nationals entering the oil and gas engineering sector as young people’s view of oil and gas engineering is dirty, hard work and dangerous, government jobs are too attractive compared to working in the private sector and companies, education institutions and government are not working closely enough together. They suggested several recommendations to overcome those obstacles of Omanisation within the oil and gas industry for example engage with national strategy, demonstrate the business benefits, increase the talent pipeline, attract, recruit and develop Omani talent and potential government actions.

Training and development in the Omani oil and gas sector

Oman, like GCC countries, is an oil-based economy. Oman is one of the oil exporting countries and it depends mainly on that to get its revenue— a recent indicator shows that 40% of Oman's Gross Domestic Product (GDP) comes from oil revenues (Rajasekar and Khan, 2013), as compared to 33% of non-oil sector contribution in 1975 (Elattari, 2011). But after the sharp decline in the crude oil price, it decided to set alternative plans to reduce its over-reliance on the oil industry through the development of local human resource, as it depended on the expertise of the worker force like most organisation. As, Budhwar et al., (2002) state, the Oman government initiated the adoption of an effective national strategic approach to human resource development as a technique to improve skilled HR where the government had a dominant role in national development. However, in the meanwhile, Oman still depends on oil as its main resource to get its revenue and achieve a competitive advantage in the oil market, so one of its strategies is to provide training and development for their employees.

Oil and gas Omani companies, like other companies, are also prevalent in the banking and finance and telecommunication sectors, and they are trying best to manage their structure, systems and processes, in order to satisfy their customers in providing better products and services to achieve competitive advantage in the absence of skilled local employees (Khan, 2010). Khan, (2010) proposes that most companies in Oman depend comprehensively on the expatriate workforce for their higher order skills and competencies, while the government set in place restrictions (Omanisation) to employ local people. This sector has more than 20000 Omani workers (Al-Jahwari and Budhwar, 2016) and Oman continue to develop its labour workforce.

More empirical studies are needed on specific training evaluations in the oil and gas industry. In the Omani context, more empirical studies examining HR-related issues are needed (Al-Hamadi et al., 2007). There is a greater need for more research studies examining HR-related issues in important oil and gas regions, such as Oman, to improve theory and practice development (Budhwar and Debrah, 2001; Al-Hamadi et al., 2007), including progress on economic growth. Stevens (2008) argued that the oil sector is central to economic development in those oil and gas countries that depend on oil.

The Omani oil and gas industry provides training programmes to its employees at different levels (Al-Harthy, 2007). Oman has invested heavily in training and development. However, Rajasekar and Khan (2013) indicated that in Oman the most significant and challenging element in the training cycle in the public sector is the evaluation process which requires more follow-up. Also, Al-Harthy (2007) investigated the usefulness of training programmes in the oil and gas industry and found that evaluated the employee performance was unfair, the feedback from the members of management was given slowly and infrequently, the feedback was not useful and the performance appraisal tool (360 degree feedback) was not essentially used to judge employees’ performance. Moreover, Khan et al., (2015) in their evaluation of the career development plan at Oman Natural Gas (ONG) found that most employees consider the current electronic training evaluation system to be ineffective because it does not provide enough space for them to express their views freely (open-ended questions) and their perceptions are also not well received, nor are they given much importance by their managers.

Evaluation is the last step in any training process. It is the final but most important aspect in measuring what return was received from the massive investment programmes initiated by interested parties (the parties could be a private institution or a government managed firms). Rajasekar and Khan (2013) indicated that the most significant and challenging element in the training cycle in Oman’s public sector is the evaluation process that requires more follow-ups. He suggested that to develop the evaluation system, a series of time-interval follow-ups and tests are needed.

The training and development programmes in the oil and gas industry in Oman are useful. A study of Omani oil and gas companies by Al-Harthy (2007) showed that training development programmes that are provided in this industry are good. However, he found that there is lack in role of supervision in motivation employees, the appraisal performance system is weak, the involvement of employees is lack and measurement tools are used not useful to assess performance and employees not get immediate feedback about their performance. This requires that management give more attention to the factors that reduce employees' motivation in order to improve their performance (Al-Harthy, 2007).

Moreover, performance appraisal is one method to assess training to determine the gaps in the current skills, and the strengths and weaknesses of individual and training needs. A study by Khan to PV (multination petroleum company in Oman) (2010) indicated that the present performance appraisal of the organisation is lacking, not useful, and not related to organisation of goals. Ninety percent of top management believed that the present appraisal system had weaknesses that needed to be modified. It also found that the employees felt that the methods used in performance appraisal needed to be changed. Furthermore, employees were not satisfied with the appraisal system; the organisation needed to link performance appraisal with organisation objectives and contribute more to develop the employees. He found that performance appraisal was an exercise that would be forgotten after a while, it is a considerable amount of paper work and consumed time. Khan found that there was a lack of seriousness when conducting performance appraisal systems among the management and employees; HR department should thus push hard to gather related information. Moreover, this study showed that line management is lack in the appraisal skills in conducting appraisal performance. It also indicated that some factors influence conducting appraisal and evaluation system, such culture of less confrontation and nepotism. It is argued that Omanis society is a collectivism system and people do not like face-to-face confrontation. The employees were not given full opportunities to participate and contribute, the system and structure in organisation is still centralised, and the authority solely belongs to the management level, without any decentralisation and empowerment. Khan concluded that the current performance appraisal should be done manually, and the participation of the workers is symbolic, and the evaluators are not honest in giving necessary feedback of the difficulties of retaining professional employees to the local companies. There are needs to motivate and encourage employees for their participations and to use on line evaluation system.

Human Resource Development is one aspect of the practice of human resource management. Therefore, the best way to understand human resources in a specific context is to investigate the factors influencing those human resources (Al-Hamadi et al., 2007). Few studies have been done on training evaluation in the context of Oman, and little research has been done specifically about the influence of the training evaluation on training effectiveness. This study aims to evaluate the influence of training characteristics on training effectiveness, particularly in the Omani oil and gas sector.

Appendix B

Survey 1 (before training)

Brunel Business School

A Covering Letter

Dear Participant,

This survey is being carried out as part of a PhD degree to research the impact of training characteristics on training effectiveness. This survey is the first part of this study, and two subsequent questionnaires will be produced in the second and third stages of this study.

The attached survey is to be completed prior to the start of the training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. **Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.**

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi
Brunel Business School
Brunel University London
Email: Aliya.Al-Mughairi@brunel.ac.uk

Part 1: Demographic Information

1. Gender (please tick only one): ☐ Female ☐ Male

2. Age (please tick only one):

   ☐ Under 30 ☐ 31–40 ☐ 41–50 ☐ 5 1–60 ☐ 61 or above

3. Highest educational achievement :

   ☐ Less than high school ☐ High school ☐ College ☐ Bachelor

   ☐ Master ☐ PhD ☐ Other :____________(please specify)

4. Years working full-time in this company:

   ☐ 0–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16-20 years

   ☐ 21 years and more

5. Work location:

   ☐ Head-office ☐ Field-administrative ☐ Field-work

   ☐ Other :___________________________(please specify)

6. Level of work (please tick only one) :

   ☐ Senior management ☐ Middle management ☐ Basic administrative

   ☐ Field-workers

7. In which department you are in? ___________________________________(required)

Part 2: Background Information (Health and Safety Training)

A- Please answer the following questions by ticking yours:

1- This training is : ☐ Optional ☐ Compulsory

2- Time given in advance of training was :

☐ 1 day ☐ 2-5 days ☐ 6-14days ☐ Over 15 days

3- This training is regularly offered:

☐ Once a week ☐ Once a month ☐ 2-3times a year ☐ Once a year

☐ Less often ☐ never

4- I was informed about this training by (please tick more than one) :

☐ E-mail ☐ Face-to-face ☐ Manager announcement ☐ Flier /poster

☐ Letter ☐ All of above ☐ Other____________________ (please specify)

B- Please answer the following questions by circling the number of your choice according to the following scales from 1 to 5.

		Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I expect the health and safety training will improve my job performance.	**5**	**4**	**3**	**2**	**1**
2	I expect the health and safety training will be highly relevant to my daily work tasks.	**5**	**4**	**3**	**2**	**1**

Part 3: Regarding the Health and Safety Training you will undertake, indicate your agreement with the following statements from 1 to 5. Circle the number of your choice.

		Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I was informed well in advance about: 7- The training methods	**5**	**4**	**3**	**2**	**1**

	to be used					
	8- The topics to be covered.	**5**	**4**	**3**	**2**	**1**
	9- Training objectives to be achieved	**5**	**4**	**3**	**2**	**1**
2	I 10- Am knowledgeable and competent in health and safety before attending this training.	**5**	**4**	**3**	**2**	**1**
	11- Feel that I need this training.	**5**	**4**	**3**	**2**	**1**
3	I expect a well-equipped training environment.	**5**	**4**	**3**	**2**	**1**
4	I expect a comfortable physical training environment.	**5**	**4**	**3**	**2**	**1**
5	I expect food and drinks- refreshments, meals, etc.	**5**	**4**	**3**	**2**	**1**
6	I expect suitable training facilities.	**5**	**4**	**3**	**2**	**1**
7	The trainer should be: 12- A good communicator	**5**	**4**	**3**	**2**	**1**
	13- Knowledgeable regarding the content	**5**	**4**	**3**	**2**	**1**
	14- Responsive to participant's questions	**5**	**4**	**3**	**2**	**1**
	15- Gave trainees useful feedback on their progress	**5**	**4**	**3**	**2**	**1**
	16- Very organised and well-prepared for the course.	**5**	**4**	**3**	**2**	**1**
	17- Use teaching aids effectively	**5**	**4**	**3**	**2**	**1**
8	After the training today, I expect to be able to deal more effectively with health and safety issues at work as • Accident and	**5**	**4**	**3**	**2**	**1**

	emergency response					
	18- Chemical and hazardous materials safety	**5**	**4**	**3**	**2**	**1**
	19- Personal protective equipment	**5**	**4**	**3**	**2**	**1**
9	Based on the announcement about this training, I expect to 20- Increase awareness my own about health and safety issues.	**5**	**4**	**3**	**2**	**1**
	21- Gain the ability to deal with safety problems at work.	**5**	**4**	**3**	**2**	**1**
	22- Promote proper safety procedures while I am on the job	**5**	**4**	**3**	**2**	**1**

Please provide e-mail address or contact phone number to complete the questionnaires in the next two stages, and if you wish to receive a summary of the study, when it finishes.

E-mail:...

Or

Phone number:..

Thank you for your co-operation

Survey 2 (Immediately after health and safety training)

Brunel Business School

A Covering Letter

Dear Participant,

This survey is being carried out as part of a PhD degree to research the impact of training characteristics on training effectiveness. This survey is the second part of this study; an additional survey questionnaire will be administered in the third stage of this study.

The attached survey is to be complete immediately after training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. **Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.**

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi
Brunel Business School
Brunel University London
Email: Aliya.Al-Mughairi@brunel.ac.uk

Part 1: Demographic Information

1- Gender (please tick only one): ☐ Female ☐ Male

2- Age(please tick only one):

☐ Under 30 ☐ 31–40 ☐ 41–50 ☐ 5 1–60 ☐ 61 or above

3- Highest educational achievement:

☐ Less than high school ☐ High school ☐ College ☐ Bachelor

☐ Master ☐ PhD ☐ Other ____________ (please specify)

4- Years working full-time in this company:

☐ 0–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16-20 years

☐ 21 years and more

5- Work location:

☐ Head-office ☐ Field-administrative ☐ Field-work

☐ Other :___________________________(please specify)

6- Level of work (please tick only one):

☐ Senior management ☐ Middle management

☐ Basic administrative ☐ Field-workers

7- In which department you are in?___________________________________(required)

Part 2: Background Information (Health and Safety Training)

Please indicate the extent to which you agree or disagree with each of the following statements from 0 to 5 according to the following scale and checking the appropriate box.

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The training methods used set out below were highly effective: • Class lecture/teaching	**5**	**4**	**3**	**2**	**1**
	• Case study	**5**	**4**	**3**	**2**	**1**
	• Simulation	**5**	**4**	**3**	**2**	**1**
	• Games	**5**	**4**	**3**	**2**	**1**
	• Other methods (please specify): ________________	**5**	**4**	**3**	**2**	**1**
2	The trainer performance and behaviour were of a very high standard.	**5**	**4**	**3**	**2**	**1**

Part 3 a: Please answer the following questions by ticking yours.

1- Which one of the following elements of the training facilities were available?

- Audio-visual equipment e.g.

  Overhead projector ☐ Yes ☐ No

  Flipchart ☐ Yes ☐ No

  Video ☐ Yes ☐ No

  Power point slides ☐ Yes ☐ No

- Other training aids (please specify): ________________ ☐ Yes ☐ No

2- The health and safety training used the following methods:

- Class lecture/teaching ☐ Yes ☐ No
- Workshop ☐ Yes ☐ No

- Case study ☐ Yes ☐ No
- Simulation ☐ Yes ☐ No
- Other methods (please specify): ________________ ☐ Yes ☐ No

Part 3 b: Regarding the Health and Safety Training you just completed, indicate your agreement with the following statements from 0 to 5. Circle the number of your choice.

Training environment		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I was very satisfied with the following elements of physical training environment during this course: • Training rooms or classrooms, etc.	**5**	**4**	**3**	**2**	**1**
	• Food and drinks-refreshments, meals, etc.	**5**	**4**	**3**	**2**	**1**
	• Lodging and leisure facilities	**5**	**4**	**3**	**2**	**1**
2	The physical training environments used during the training were well equipped: • Training rooms or classrooms, etc.	**5**	**4**	**3**	**2**	**1**

	• Food and drinks - refreshments, meals, etc	**5**	**4**	**3**	**2**	**1**
	• Lodging and leisure facilities	**5**	**4**	**3**	**2**	**1**
3	The following elements of the training facilities were the most helpful for learning. • Audio-visual equipment e.g. Overhead projector	**5**	**4**	**3**	**2**	**1**
	Flipchart	**5**	**4**	**3**	**2**	**1**
	Video	**5**	**4**	**3**	**2**	**1**
	PowerPoint slides	**5**	**4**	**3**	**2**	**1**
	• Other training aids (please specify): ______________	**5**	**4**	**3**	**2**	**1**
4	The training environment enabled me to get the maximum value from this course.	**5**	**4**	**3**	**2**	**1**
	Training methods	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
5	I was very satisfied with the following elements of the training methods used for delivery of the course materials: • Class lecture/teaching	**5**	**4**	**3**	**2**	**1**
	• Case study	**5**	**4**	**3**	**2**	**1**
	• Simulation	**5**	**4**	**3**	**2**	**1**

	• Games	**5**	**4**	**3**	**2**	**1**
	• Other methods (please specify): ________________	**5**	**4**	**3**	**2**	**1**
	Trainer performance and behaviour	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
6	The trainer of this course: • Had good communication skills.	**5**	**4**	**3**	**2**	**1**
	• Gave me useful feedback on my progress.	**5**	**4**	**3**	**2**	**1**
	• Answered the trainees' questions.	**5**	**4**	**3**	**2**	**1**
	• Kept the interest of the learners during the training sessions.	**5**	**4**	**3**	**2**	**1**
	• Was very organised and well-prepared for the course.	**5**	**4**	**3**	**2**	**1**
	• His/her teaching methods and materials encouraged me to gain new knowledge and skills.	**5**	**4**	**3**	**2**	**1**
	• Used teaching aids effectively.	**5**	**4**	**3**	**2**	**1**
	• Was always present for the training.	**5**	**4**	**3**	**2**	**1**
	Reaction	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**

7	I feel that this training was highly effective.	**5**	**4**	**3**	**2**	**1**
8	The tasks and exercises of the training session were relevant to my work tasks.	**5**	**4**	**3**	**2**	**1**
9	I found it difficult to follow this course.	**5**	**4**	**3**	**2**	**1**
10	I acquired new knowledge of and good skills in health and safety from this course.	**5**	**4**	**3**	**2**	**1**
	Learning	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
11	I learned a lot from this course.	**5**	**4**	**3**	**2**	**1**
12	I have forgotten most of what I learned from this training programme.	**5**	**4**	**3**	**2**	**1**
13	I remember most I learned in this training programme.	**5**	**4**	**3**	**2**	**1**
	Intention to transfer learning	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
14	I think I will do things differently when I go back to work after this training.	**5**	**4**	**3**	**2**	**1**
15	I feel that I can apply what I learned in the workplace.	**5**	**4**	**3**	**2**	**1**

Please provide your e-mail address or contact phone number to complete the questionnaire in the next last stage, and if you wish to receive a summary of the study, when it finishes.

E-mail:..

Or

Phone number:..

Thank you for your co-operation

Survey 3 (2-3 months after completed training)

Brunel University London

Brunel Business School

A Covering Letter

Dear Participant,

This survey is being carried out as part of a PhD degree to research the impact of training characteristics on training effectiveness. This survey is the last part of this study which consisted of three stages.

The attached survey is to be completed 2-3 months after completed training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. **Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.**

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi

Brunel Business School

Brunel University London

Email: Aliya.Al-Mughairi@brunel.ac.uk

Part 1: Demographic Information

1- Gender (please tick only one): ☐ Female ☐ Male

2- Age (please tick only one):

☐ Under 30 ☐ 31–40 ☐ 41–50 ☐ 5 1–60 ☐ 61 or above

3- Highest educational achievement:

☐ Less than high school ☐ High school ☐ College ☐ Bachelor

☐ Master ☐ PhD ☐ Other :____________(please specify)

4- Years working full-time in this company:

☐ 0–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16-20 years

☐ 21 years or more

5- Work location:

☐ Head-office ☐ Field-administrative ☐ Field-work

☐ Other :___________________________(please specify)

6- Level of work (please tick only one) :

☐ Senior management ☐ Middle management ☐ Basic administrative

☐ Field-workers

7- In which department you are in?_________________________________(required)

Part 2: Background Information (Health and Safety Training)

Please indicate the extent to which you agree or disagree with each of the following statements by checking the appropriate box according to the following scale from 1 to 5.

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The training directly related to my everyday work role.	**5**	**4**	**3**	**2**	**1**
2	The relevance of training content to my everyday work was very high.	**5**	**4**	**3**	**2**	**1**
3	The relevance of the stated training objectives to my work was very high.	**5**	**4**	**3**	**2**	**1**

Part 3: Regarding the Health and Safety Training you took, indicate your agreement with the following statements from 0 to 5. Circle the number of your choice.

Training content		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The information and skills provided in this training programme were easy to apply.	**5**	**4**	**3**	**2**	**1**
2	Information offered in this training improves my professional competencies.	**5**	**4**	**3**	**2**	**1**
3	The knowledge and skills required for my job were well supported by the practical activities and exercises of this training programme.	**5**	**4**	**3**	**2**	**1**
4	The importance of applying training skills in the workplace was identified.	**5**	**4**	**3**	**2**	**1**
Training objectives		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
6	Training objectives were expressed clearly.	**5**	**4**	**3**	**2**	**1**
7	The training programme accomplished its stated objectives.	**5**	**4**	**3**	**2**	**1**
Usefulness of training		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**

8	The knowledge and skills offered in this course qualify me for dealing with the following health and safety issues: 5- Accident and emergency response	**5**	**4**	**3**	**2**	**1**
	6- Chemical and hazardous materials safety	**5**	**4**	**3**	**2**	**1**
	7- Equipment and machinery	**5**	**4**	**3**	**2**	**1**
	8- Personal protective equipment	**5**	**4**	**3**	**2**	**1**
	9- Other health and safety issues: (please specify) ________________	**5**	**4**	**3**	**2**	**1**
9	After this training I : 10- Am better able to recognise unsafe working practices.	**5**	**4**	**3**	**2**	**1**
	11- Have more personal awareness of health and safety issues.	**5**	**4**	**3**	**2**	**1**
	12- Know what to do when I am doing something unsafe or I witness or create unsafe practices.	**5**	**4**	**3**	**2**	**1**
10	This training will help me to promote proper safety procedures while I am on the job.	**5**	**4**	**3**	**2**	**1**

Thank you for your co-operation

Figure 4.4 web-based Survey 1

Survey 1 : Prior the start of the training

A Covering Letter

Dear Participant,

This survey is being carried out as part of a PhD degree to research the impact of training characteristics on training effectiveness.This survey is the first part of this study, and two subsequent questionnaires will be produced in the second and third stages of this study.

The attached survey is to be completed prior to the start of the training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi

Brunel Business School

Brunel University London

Email: Aliya.Al-Mughairi@brunel.ac.uk

1

4. **Years working full-time in this company:**

◯ 0–5 years

◯ 6–10 years

◯ 11–15 years

◯ 16-20 years

◯ 21 years and more

5. **Work location:**

◯ Head-office

◯ Field-administrative

◯ Field-work

◯ Other (please specify)

6. **Level of work (please select only one) :**

◯ Senior management

◯ Middle management

◯ Basic administrative

◯ Field-workers

* 7.

In which department you are in:

3

Survey 1 : Prior the start of the training

Part 2: Background Information (Health and Safety Training)

A- Please answer the following questions by selecting yours:

1. This training is

- Optional
- Compulsory

2. Time given in advance of training was

- 1 day
- 2-5 days
- 6-14days
- Over 15 days

3. This training is regularly offered

- Once a week
- Once a month
- 2-3 times a year
- Once a year
- Less often
- Never

4

* 4.

I was informed about this training by (please select more than one)

- ☐ E-mail
- ☐ Face-to-face
- ☐ Manager announcement
- ☐ Flier /poster
- ☐ Letter
- ☐ All of above
- ☐ Other (please specify)

Survey 1 : Prior the start of the training

Part 2 B:

Please answer the following questions by selecting the number of your choice according to the following scales from 1 to 5.

1.

I expect the health and safety training will improve my job performance.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

2.

I expect the health and safety training will be highly relevant to my daily work tasks.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

Survey 1 : Prior the start of the training

Part 3

Regarding the Health and Safety Training, you will undertake, indicate your agreement with the following statements from 1 to 5. Select your choice.

1.

I was informed well in advance about :

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• The training methods to be used	◯	◯	◯	◯	◯
• The topics to be covered.	◯	◯	◯	◯	◯
• Training objectives to be achieved	◯	◯	◯	◯	◯

2. **I**

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Am knowledgeable and competent in health and safety before attending this training.	◯	◯	◯	◯	◯
• Feel that I need this training.	◯	◯	◯	◯	◯

3.

I expect a well-equipped training environment.

Strongly agree	Agree	Neutral	Disgree	Strongly disagree
◯	◯	◯	◯	◯

4.

I expect a comfortable physical training environment.

Strongly agree	Agree	Neutral	Disgree	Strongly disagree
◯	◯	◯	◯	◯

7

5.

I expect food and drinks- refreshments, meals, etc.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

6. I expect suitable training facilities.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

7.

The trainer should be:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• A good communicator	◯	◯	◯	◯	◯
• Knowledgeable regarding the content	◯	◯	◯	◯	◯
• Responsive to participant's questions	◯	◯	◯	◯	◯
• Gave trainees useful feedback on their progress	◯	◯	◯	◯	◯
• Very organised and well-prepared for the course.	◯	◯	◯	◯	◯
• Use teaching aids effectively	◯	◯	◯	◯	◯

8.

After the training today, I expect to be able to deal more effectively with health and safety issues at work as :

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Accident and emergency response	◯	◯	◯	◯	◯
• Chemical and hazardous materials safety	◯	◯	◯	◯	◯
• Personal protective equipment	◯	◯	◯	◯	◯

9.

Based on the announcement about this training, I expect to

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Increase awareness my own about health and safety issues.	◯	◯	◯	◯	◯
• Gain the ability to deal with safety problems at work.	◯	◯	◯	◯	◯
• Promote proper safety procedures while I am on the job	◯	◯	◯	◯	◯

10.

Please provide an e-mail address or contact phone number to complete the questionnaires in the next two stages, and if you wish to receive a summary of the study when it finishes.

Thank you for your co-operation

9.

Based on the announcement about this training, I expect to

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Increase awareness my own about health and safety issues.	◯	◯	◯	◯	◯
• Gain the ability to deal with safety problems at work.	◯	◯	◯	◯	◯
• Promote proper safety procedures while I am on the job	◯	◯	◯	◯	◯

10.

Please provide an e-mail address or contact phone number to complete the questionnaires in the next two stages, and if you wish to receive a summary of the study when it finishes.

Thank you for your co-operation

Figure 4.5 web-based Survey2

Survey 2: Immediately after complete training

1. **A Covering Letter**

Dear Participant,

This survey is being carried out as part of a PhD degree to research the impact of training characteristics on training effectiveness. This survey is the first part of this study, and two subsequent questionnaires will be produced in the second and third stages of this study.

The attached survey is to be completed prior to the start of the training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi

Brunel Business School

Brunel University London

Email: Aliya.Al-Mughairi@brunel.ac.uk

1

Survey 2: Immediately after complete training

2. Part 1: Demographic Information

1.

Gender (please select only one):

- ◯ Female
- ◯ Male

2.

Age (please select only one):

- ◯ Under 30
- ◯ 31–40
- ◯ 41–50
- ◯ 5 1–60
- ◯ 61 or above

3.

Highest educational achievement :

- ◯ Less than high school
- ◯ High school
- ◯ College
- ◯ Bachelor
- ◯ Master
- ◯ PhD
- ◯ Other (please specify)

4.

Years working full-time in this company:

◯ 0–5 years

◯ 6–10 years

◯ 11–15 years

◯ 16-20 years

◯ 21 years and more

5.

Work location :

◯ Head-office

◯ Field-administrative

◯ Field-work

◯ Other (please specify)

6.

Level of work (please select only one) :

◯ Senior management

◯ Middle management

◯ Basic administrative

◯ Field-workers

* 7.

In which department you are in?

3

Survey 2: Immediately after complete training

3. Part 2: Background Information (Health and Safety Training)

Please indicate the extent to which you agree or disagree with each of the following statements from 5 to 0 according to the following scale and checking the appropriate box.

1.

The training methods used set out below were highly effective.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Class lecture/teaching	◯	◯	◯	◯	◯
• Case study	◯	◯	◯	◯	◯
• Simulation	◯	◯	◯	◯	◯
• Games	◯	◯	◯	◯	◯
• Other methods	◯	◯	◯	◯	◯

2. The training methods used set out below were highly effective.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
•Class lecture/teaching	◯	◯	◯	◯	◯
•Case study	◯	◯	◯	◯	◯
• Simulation	◯	◯	◯	◯	◯
• Games	◯	◯	◯	◯	◯
• Other methods	◯	◯	◯	◯	◯

4

Survey 2: Immediately after complete training

4. Part 3 a:

Please answer the following questions by selecting yours.

1.

Which one of the following elements of the training facilities were available?

	Yes	No
• Audio-visual equipment e.g. **Overhead projector**	◯	◯
• Audio-visual equipment e.g. **Flipchart**	◯	◯
• Audio-visual equipment e.g. **Video**	◯	◯
• Audio-visual equipment e.g. **Power point slides**	◯	◯
• Other training aids	◯	◯

If your selection is 'Yes' for 'Other training aids' (please specify)

2.

The health and safety training used the following methods :

	Yes	No
• Class lecture/teaching	◯	◯
• Workshop	◯	◯
• Case study	◯	◯
• Simulation	◯	◯
• Other methods	◯	◯

If your selection is 'Yes' for 'Other methods' choice (please specify)

5

Survey 2: Immediately after complete training

5. Part 3 b:

Regarding the Health and Safety Training you just completed, indicate your agreement with the following statements from Strongly agree to Not applicable. Select your choice.

1.

I was very satisfied with the following elements of physical training environment during this course:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Training rooms or classrooms, etc.	○	○	○	○	○
• Food and drinks-refreshments, meals, etc.	○	○	○	○	○
• Lodging and leisure facilities	○	○	○	○	○

2.

I acquired new knowledge of and good skills in health and safety from this course.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

3.

The physical training environments used during the training were well equipped:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Training rooms or classrooms, etc.	○	○	○	○	○
• Food and drinks - refreshments, meals, etc	○	○	○	○	○
• Lodging and leisure facilities	○	○	○	○	○

6

4.

The following elements of the training facilities were the most helpful for learning.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
•Audio-visual equipment e.g.Overhead projector	○	○	○	○	○
•Audio-visual equipment e.g. Flipchart	○	○	○	○	○
•Audio-visual equipment e.g.Video	○	○	○	○	○
•Audio-visual equipment e.g. Power Point slides	○	○	○	○	○
• Other training aids	○	○	○	○	○

If your selection is 'agree' or 'strongly agree' for 'Other training aids' (please specify)

5.

The training environment enabled me to get the maximum value from this course.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

6.

I was very satisfied with the following elements of the training methods used for delivery of the course materials:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
• Class lecture/teaching	○	○	○	○	○
• Case study	○	○	○	○	○
• Simulation	○	○	○	○	○
• Games	○	○	○	○	○
• Other methods	○	○	○	○	○

If your selection is 'agree' or 'strongly agree' for 'Other methods' choice (please specify)

7.

The trainer of this course

	Strongly agree	Agree	Neutral	Disgree	Strongly disagree
• Had good communication skills.	○	○	○	○	○
• Gave me useful feedback on my progress	○	○	○	○	○
• Answered the trainees' questions	○	○	○	○	○
• Kept the interest of the learners during the training sessions	○	○	○	○	○
• Was very organised and well-prepared for the course.	○	○	○	○	○
• His/her teaching methods and materials encouraged me to gain new knowledge and skills.	○	○	○	○	○
• Used teaching aids effectively	○	○	○	○	○
• Was always present for the training.	○	○	○	○	○

8.

I feel that this training was highly effective.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

9.

The tasks and exercises of the training session were relevant to my work tasks.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

10.

I found it difficult to follow this course.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

11. **I acquired new knowledge of and good skills in health and safety from this course.**

Strongly agree	Agree	Neutal	Disagree	Strongly disagree
○	○	○	○	○

12.

I learned a lot from this course.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

13.

I have forgotten most of what I learned from this training programme.

Strongly agree	Agree	Neutral	Disagree	Strongly agree
○	○	○	○	○

14.

I remember most I learned in this training programme.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

15. **I think I will do things differently when I go back to work after this training.**

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

16.

I feel that I can apply what I learned in the workplace.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

17.

Please provide your e-mail address or contact phone number to complete the questionnaire in the next last stage, and if you wish to receive a summary of the study when it finishes.

Thank you for your co-operation

10

Figure 4.6 web-based Survey 3

Survey 3: 2-3 months after training

A Covering Letter

Dear Participant,

This survey is being carried out as part of aPhD degree to research the impact of training characteristics on training effectiveness. This survey is the last part of this study which consisted of three stages.

The attached survey is to be completed 2-3 months after completed training programme and will take approximately 10 minutes to complete. All questions require you to answer in the space provided. Participation is completely voluntary and you may withdraw from the survey at any time without any obligation. Data collected will be kept securely. The data will only be used in an aggregated form in the study report with no reference to you as an individual.

If you have any questions, I will endeavour to answer them.

Thank for your cooperation.

Yours Faithfully,

Aliya Al-Mughairi

Brunel Business School

Brunel University London

Email: Aliya.Al-Mughairi@brunel.ac.uk

1

Survey 3: 2-3 months after training

Part 1: Demographic Information

1.

Gender (please select only one):

◯ Female

◯ Male

2.

Age (please select only one)

◯ Under 30

◯ 31–40

◯ 41–50

◯ 5 1–60

◯ 61 or above

3.

Highest educational achievement

◯ Less than high school

◯ High school

◯ College

◯ Bachelor

◯ Master

◯ PhD

◯ Other (please specify)

4.

Years working full-time in this company

- 0–5 years
- 6–10 years
- 11–15 years
- 16-20 years
- 21 years or more

5.

Work location

- Head-office
- Field-administrative
- Field-work
- Other (please specify)

6. Level of work (please select only one)

- Senior management
- Middle management
- Basic administrative
- Field-workers

* 7. In which department you are in?

Survey 3: 2-3 months after training

Part 2: Background Information (Health and Safety Training)

Please indicate the extent to which you agree or disagree with each of the following statements by checking the appropriate box according to the following scale from 1 to 5.

1.

The training directly related to my everyday work role.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

2.

The relevance of training content to my everyday work was very high.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

3.

The relevance of the stated training objectives to my work was very high.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

4

Survey 3: 2-3 months after training

Part 3:

Regarding the Health and Safety Training you took, indicate your agreement with the following statements from 0 to 5. Circle the number of your choice.

1.
The information and skills provided in this training programme were easy to apply.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

2.
Information offered in this training improves my professional competencies.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

3.
The knowledge and skills required for my job were well supported by the practical activities and exercises of this training programme.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

4. **The importance of applying training skills in the workplace was identified.**

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

5.
Training objectives were expressed clearly.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
◯	◯	◯	◯	◯

5

6.

The training programme accomplished its stated objectives.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

7.

The knowledge and skills offered in this course qualify me for dealing with the following health and safety issues:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Accident and emergency response	○	○	○	○	○
Chemical and hazardous materials safety	○	○	○	○	○
Equipment and machinery	○	○	○	○	○
Personal protective equipment	○	○	○	○	○
Other health and safety issues	○	○	○	○	○

If your selection for 'Other health and safety issues' is agree or strongly agree (please specify)

8.

After this training I :

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Am better able to recognise unsafe working practices.	○	○	○	○	○
Have more personal awareness of health and safety issues.	○	○	○	○	○
Know what to do when I am doing something unsafe or I witness or create unsafe practices.	○	○	○	○	○

6

9.

This training will help me to promote proper safety procedures while I am on the job.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

College of Business, Arts and Social Sciences, Business School

PARTICIPANT INFORMATION SHEET

Study title

The evaluation of training and development of employees: the case of a national oil and gas industry.

Invitation Paragraph

You are kindly invited to participate in this study of: The evaluation of training and development of employees: the case of a national oil and gas industry. The survey should take approximately 10 minutes to complete. Your responses are very significant for this study. All collected data and information will be kept strictly confidential, and all responses to this survey are anonymous. Furthermore, all the data and information will be used only for academic purposes. Please take your time to decide whether you wish to participate in this study. You may withdraw from the survey at any time without any obligation.

What is the purpose of the study?

The main aim of this study is to acquire a better understanding of how design and delivery training factors influence training effectiveness in the national oil and gas industry in Oman. The fundamental reason for selecting this sector is because of its significant contribution to Oman's economy. Furthermore, its contributions amount to 40% of Omani economic growth.

Most interesting, this study intends to address the gap in the literature on how design and delivery training factors influence training effectiveness by focusing on the effect and moderate impact of these factors on four training aspects (reaction, learning, behaviour and results).

Why have I been invited to participate?

You have been invited to participate in study since you are a trainee involved in health and safety training-based decision making in your company. In addition, this study needs to acquire a clear understanding of how design and delivery training factors influence training effectiveness in the present work environment.

Do I have to take part?

Your participation in this study is completely voluntary. You are free to withdraw at any time and without any obligation.

What will happen to me if I take part?

If you decide to take part in the study, you will be asked to sign the consent form. After that, your feedback on the survey will beneficial for understanding the impact of design and delivery training factors in training effectiveness in national oil and gas industry in developed and developing countries.

What do I have to do?

You are required to answer all questions based on your understanding and experience in the present business setting.

What are the possible disadvantages and risks of taking part?

There are no anticipated risks from your participation in this study.

What if something goes wrong?

Please do not hesitate to contact the director of the College of Business, Art and Social Research Ethics committee regarding any complaint pertaining to ethical issues in this study.

Will my taking part in this study be kept confidential?

Upon completion of this study, all the collected data and information pertaining to this study will be destroyed unless permission is provided to be contacted with regard to potential further studies.

What will happen to the results of the research study?

All results and findings from the study will be presented in a thesis and may be submitted for journal publication.

Who is organising and funding the research?

Brunel Business School supports this research and all the expenses of the research are borne by the researcher.

What are the indemnity arrangements?

Brunel Business School provides appropriate insurance that covers the indemnity based on ethical approval.

Who has reviewed the study?

This material for this research has been reviewed by the College Research Ethics committee.

Passage on the University's commitment to the UK Concordat on Research Integrity

Brunel University is committed to compliance with the Universities UK Research Integrity Concordat. You are entitled to expect the highest level of integrity from our researchers during the course of their research.

Contact for further information and complaints

Researcher **Aliya Al-Mughairi** Ph.D. Candidate Tel: +44(0)7584194557 Email: Aliya.Al-Mughairi@brunel.ac.uk Brunel Business School

College of Business, Arts and Social Sciences Eastern Gateway Building, Brunel University, Uxbridge, UB8 3PH, UK
Principal Supervisor **Dr. Angela Ayios** Lecturer in CSR and Business Ethics Email: Angela.Ayios@brunel.ac.uk Tel: +44 (0)189526673 Brunel Business School College of Business, Arts and Social Sciences Eastern Gateway Building, Brunel University, Uxbridge, UB8 3PH, UK
College of Business, Arts and Social Sciences Research Ethics Committee **PROFESSOR JAMES KNOWLES** Vice- Dean Research and Professor of Renaissance Literature and Culture Tel: +44(0)1895267332 Brunel University College of Business, Arts and Social Sciences Department of Arts and Humanities

Brunel University London

College of Business, Arts and Social Sciences, Business School

CONSENT FORM

The evaluation of training and development of employees: the case of a national oil and gas industry

The participant should complete the whole of this sheet		
	Please tick the appropriate box	
	YES	NO
Have you read the Research Participant Information Sheet?		
Have you had an opportunity to ask questions and discuss this study?		
Have you received satisfactory answers to all your questions?		
Who have you spoken to?		
Do you understand that you will not be referred to by name in any report concerning the study?		
Do you understand that you are free to withdraw from the study:		
• at any time?		
• without having to give a reason for withdrawing?		
• (where relevant, adapt if necessary) without affecting your future care?		
(Where relevant) I agree to my interview being recorded.		
(Where relevant) I agree to the use of non-attributable direct quotes when the study is written up or published.		
Do you agree to take part in this study?		
Signature of Research Participant:		
Date:		
Name in capitals:		
<u>Witness statement</u>(if required – adapt where necessary):		
I am satisfied that the above-named has given informed consent.		
Witnessed by:		
Date:		
Name in capitals:		

Researcher name: Aliya Al-Mughairi	Signature: Aliya
Supervisor name:Dr. Angela Ayios	Signature: Dr. Angela

Demographic profile of respondents for the three Surveys pilot study

Demographic profile of respondents for Survey 1 pilot study (before training)

This section presents the demographic details of the respondents in the pilot study for Survey 1 (before training). Table 4.11 shows the participants' genders, ages, education levels, years working full time, work locations, levels of work and occupations.

Table 4.11 Demographic details of respondents for Survey 1 pilot study (before training) (N = 56)

Demographic details of respondents for Survey 1 (before training) (N = 56).

Variable	Category	Frequency	%
Gender	Female	12	21.4
	Male	44	78.6
Age	Under 30	24	42.9
	31–40	19	33.9
	41–50	8	14.3
	51–60	3	5.4
	61 or above	2	3.6
Highest education level attained	Less than high school	0	0
	High school	4	7.1
	College	17	30.4
	Bachelor	19	33.9
	Master	16	28.6
	PhD	0	0
	Other	0	0
Years working full time at the current company	0–5 years	21	37.5
	6–10 years	12	21.4
	11–15 years	18	32.1
	16–20 years	2	3.6
	21 years and more	3	5.4
Work location	Head office	31	55.4
	Field administration	9	16.1
	Field work	14	25.0
	Other	2	3.6
Level of work	Senior management	7	12.5
	Middle management	32	57.1
	Basic administrator	6	10.7
	Field worker	11	19.6

Occupation (department)	Finance	4	7.1
	Human resources, training	8	14.3
	Administration	4	7.1
	Operations	8	14.3
	Production	7	12.5
	Engineering	10	17.9
	Services	6	10.7
	Sales, commercial and marketing	5	8.9
	Supply chain	3	5.4
	Security	1	1.8
	Technical, information systems	4	7.1

The results from the pilot study for Survey 1 (Table 4.11) indicate that the majority of the participants were male (n = 44, 78.6%) and the remaining respondents were female (n = 12, 21.4%). The majority of the respondents were under 30 years of age (n = 24, 33.9%), and those between 31–40 years of age were the second highest in number (n = 19, 36.5%).

The findings from the pilot study indicated that most of participants had bachelor degrees (n = 19, 33.9%), followed by those with ‘other’ college qualifications (n = 17, 30.4%). Meanwhile, 7.1% of participants had a high school level of education. These findings indicate that the employees who were selected for health and safety generally had higher levels of education.

The pilot study also revealed that most of the respondents had worked 0–5 years full time at their current companies (n = 21, 37.5%), and those who had worked 11–15 years full time represented the second largest group (n = 18, 32.1%).

The findings from the pilot study showed that the majority of the respondents had worked in the head office (n = 31, 55.4%), followed by those who had worked in the field (n = 14, 25.0%). The results also revealed that the majority of the respondents worked at the middle management level (n = 32, 57.1%), followed by those who were field workers (n = 11, 19.6%).

Moreover, the pilot study showed that the respondents were employed in one of the following areas: finance, human resources, training, administration, operations, and production, engineering services, sales (commercial and marketing), supply chain, security and technical and information systems. The percentage of trainees who worked in human resources, training and operations was the same (n = 8, 14.3%). Finally, the response rate of 93.33% in the pilot study for Survey 1 was very good, which was encouraging. In addition, the sample size was big enough to allow for more analysis, as discussed below.

Demographic profile of respondents for Survey 2 pilot study (immediately after training)

This section presents the demographic details of the respondents in the pilot study for Survey 2 (immediately after training). Table 4.10 presents the participants' genders, ages, education levels, years working full time, work locations, levels of work and occupations at Omani oil and gas companies.

Table 4.12 Demographic details of respondents for Survey 2 pilot study (immediately after training) (N = 52)

Demographic details of respondents for Survey 2 (immediately after training) (N = 52).

Variable	**Category**	**Frequency**	**%**
Gender	Female	10	19.2
	Male	42	80.8
Age	Under 30	20	38.5
	31–40	19	36.5
	41–50	8	15.4
	51–60	3	5.8
	61 or above	2	3.8
Highest education level attained	Less than high school	0	0
	High school	4	7.7
	College	15	28.8
	Bachelor	19	36.5
	Master	14	26.9
	PhD	0	0
	Other	0	0
Years working full time at the current company	0–5 years	18	34.6
	6–10 years	12	23.1
	11–15 years	17	32.7
	16–20 years	2	3.8
	21 years and more	3	5.8
Work location	Head office	29	55.8
	Field administration	9	17.3
	Field work	12	23.1
	Other	2	3.8
Level of work	Senior management	7	13.5
	Middle management	31	59.6
	Basic administration	5	9.6

	Field worker	9	17.3
Occupation (department)	Finance	3	5.8
	Human resources, training	8	15.4
	Administration	3	5.8
	Operations	7	13.5
	Production	6	11.5
	Engineering	8	15.4
	Services	6	11.5
	Sales, commercial and marketing	5	9.6
	Supply chain	3	5.8
	Security	0	0
	Technical, information systems	3	5.8

The results of the pilot study for Survey 2 (Table 4.10) indicate that among the 52 respondents, the majority of participants were male (n = 42, 80.8%) and the remaining respondents were female (n = 10, 19.2%). The majority of respondents were under 30 years of age (n = 20, 38.5%) and those between 31–40 years of age were the second highest in number (n = 19, 36.5%).

The findings also showed that most of the participants had a bachelor degree (n = 19, 36.5%), followed by those who had ‘other’ college qualifications (n = 15, 28.8%). Meanwhile, 7.7% of participants had lower levels of educational qualifications. These findings indicate that the employees selected for health and safety training generally had higher levels of education.

The pilot study for Survey 2 also revealed that most of the respondents had worked 0–5 years full time at their current companies (n = 18, 34.6%), while those working 11–15 years full time were second largest group (n = 17, 32.7%).

The finding indicated that a majority of the respondents worked in the head office (n = 29, 55.8%), followed by those who worked in the field (n = 12, 23.1%). Furthermore, the majority of the respondent worked at the middle management level (n = 29, 59.6%), followed by those who were field workers (n = 9, 17.3%).

The respondents were employed in one of the following areas: finance, human resources, training, administration, operations, production, engineering services, sales (commercial and marketing), supply chain, security and technical and information systems. Coincidentally, the percentage of those working in human resources, training and engineering was the same (n = 8, 15.4%).

Finally, the response rate of 86.66% achieved in the pilot study for Survey 2 was very good, which was very encouraging. In addition, the sample size was big enough to allow for more analysis, as discussed below.

4.9.1.3 Demographic profile of respondents for Survey 3 pilot study (2–3 months after training)

This section presents the demographic information of the respondents in Survey 3 (2–3 months after training). Table 4.13 indicates the participants' genders, ages, education levels, years working full time, work locations, levels of work and occupations.

Table 4.13 Demographic details for respondents in the pilot study for Survey 3 (2–3 months after training) (N = 50).

Demographic details for respondents in the pilot study for Survey 3 (2–3 months after training) (N = 50).

Variable	Category	Frequency	%
Gender	Female	10	20
	Male	40	80
Age	Under 30	20	40
	31–40	17	34
	41–50	8	16
	51–60	3	6
	61 or above	2	4
Highest education level attained	Less than high school	0	0
	High school	4	8
	College	15	30
	Bachelor	18	36
	Master	13	26
	PhD	0	0
	Other	0	0
Years working full time at the current company	0–5 years	18	36
	6–10 years	11	22
	11–15 years	16	32
	16–20 years	2	4
Work location	Head office	27	54
	Field administration	9	18

	Field work	12	24
	Other	2	4
Level of work	Senior management	7	14
	Middle management	29	58
	Basic administration	5	10
	Field worker	9	18
Occupation (department)	Finance	3	6
	Human resources, training	8	16
	Administration	3	6
	Operations	7	14
	Production	6	12
	Engineering	8	16
	Services	6	12
	Sales, commercial and marketing	5	10
	Supply chain	3	6
	Security	0	0
	Technical, information systems	1	2

The results of Survey 3 (Table 4.13) show that among the 50 respondents, the majority of the participants were male (n = 40, 80%) and the remaining respondents were female (n = 10, 20%). The majority of the respondents were under 30 years of age (n = 20, 40%), and those between 31–40 years of age were second highest in number (n=17, 34%).

Most of the participants had a bachelor degree (n = 18, 36%), followed by those who had ‘other’ college qualifications (n = 15, 30%). Meanwhile, 8% of participants had a high school level of education. These findings indicate that the employees who completed health and safety training generally had higher levels of education.

The pilot study revealed that most of the respondents had worked 0–5 years full time at their current companies (n = 18, 36%), while those working 11–15 years full time were the second highest in number (n = 16, 32%).

The study indicated that the majority of respondents worked in the head office (n = 27, 54%), followed by those who worked in the field (n = 12, 24%). The majority of respondents worked at the middle management level (n = 29, 58%), followed by those who were field workers (n = 9, 18%).

The pilot study for Survey 3(2–3 months after training) showed that the respondents were employed in one of the following areas: finance, human resources, training, administration, operations, production, engineering services, sales (commercial and marketing), supply chain, security and technical and information systems. The percentage of those working in human resources, training and engineering was the same (n = 8, 16%).

The response rate was 83.33% in the pilot study for Survey 3, which was encouraging. In addition, the sample size was big enough to allow for more analysis, as discussed below.

Reliability of Survey 1 pilot study (before training)

Table 4.14 Cronbach's alpha coefficients for all constructs in Survey 1 pilot study (before training)

Cronbach's alpha coefficients for all constructs in Survey 1 (before training).

Construct	Cronbach's alpha
Expectations for training outcomes (ETO)	0.706
Pre-training interventions and activities (PTIA)	0.777
Trainee readiness (TR)	0.680
Expectations for the training environment (ETE)	0.854
Expectations for trainer performance and behaviour (ETPB)	0.800

Reliability of Survey 2 (immediately after completed training)

Table 4.15 Cronbach's alpha coefficients for all constructs in Survey 2 pilot study (immediately after completed training).

Cronbach's alpha coefficients for all constructs in Survey 2 (immediately after completed training).

Construct	Cronbach's alpha
Training environment (TE)	0.925
Training methods (TM)	0.882
Trainer performance and behaviour (TPB)	0.943
Reaction (R)	0.733
Learning (L)	0.803
Intention to transfer learning (ITL)	0.874

Reliability of Survey 3 pilot study (2–3 months after training)

Table 4.16 Cronbach's alpha coefficients for all constructs in Survey 3 pilot study (2–3 months after training)

Cronbach's alpha coefficients for all constructs in Survey 3 (2–3 months after training)

Construct	Cronbach's alpha
Training content (TC)	0.770
Training objectives (TO)	0.767
Behavioural change (B)	0.821
Results (Rs)	0.769

Table 4.17 Summary of statistical software packages used to analyse the data

Summary of statistical software packages used to analyse the data.

Screening data					
Analysis	**Statistics**	**Software Package**	**Purpose**	**Remarks**	**Reference (s)**
Missing data	Little MCAR test	IBM SPSS 20.0	To identify the special case of monotone missing data.	The test showed an insignificant value, indicating that the data were missing completely at random. Missing data under 10% will not affect the results of data.	Little (1988), Hair et al., 2010)
Outlier	Standardised scores (z)	IBM SPSS 20.0	To explore the univariate outliers.	The cut point was ± 3.29 for the standardised scores.	Tabachnick and Fidell (2014)
Normality	Kolmogorov and Shapiro	IBM SPSS 20.0	To discover data normality.	Significant value > 0.05	Pallant (2016)
	Kurtosis and Skewness	IBM SPSS 20.0	To discover data normality.	The maximum acceptable limits of observation values for the skewness and kurtosis up to ±3.	Kline (2005), West et al. (1995)
Multicollinearity	Tolerance and variance inflation factor (VIF)	IBM SPSS 20.0	To show the state of high correlation between independent variables	Tolerance <0.1 or/and VIF > 5	Pallant (2016), Montgomery et al., (2012)
Descriptive analysis					
Descriptive analysis	Descriptive statistics (i.e., frequencies, means,	IBM SPSS 20.0	To summarise the participants' demographic information.	This analysis was applied to summarise the demographic information of the participants to get the feel of data, as well as the preliminary data.	Sekaran (2003)

	standard deviations)				
Reliability assessment					
Reliability	Cronbach's alpha	IBM SPSS 20.0	To measure the internal consistency.	The minimum performed acceptance for Cronbach’s alpha was 0.7 for the reliability coefficients.	Hinton et al. (2004)
Factor analysis					
Factor analysis	Bartlett’s test	IBM SPSS 20.0	To examine whether the variables in a given sample were adequate for correlation.	Significant < 0.05	Hair et al., 2010
	Kaiser-Meyer-Olkin (KMO)	IBM SPSS 20.0	To confirm the relationship between the variables.	Value > 0.6	
Structural equation modelling (SEM)					
Confirmatory factor analysis (CFA)	Absolute fit	SEM using AMOS 21.0	To evaluate the unidimensionality and reliability of the constructs used in the framework.	Absolute fit indices assess the theory suggested by the researcher to determine if it fits the sample data.	Hair et al. (2014)
	Incremental fit			Incremental fit indices evaluate the estimated model fits to see if is related to some alternative baseline model.	
	Parsimony fit			Parsimonious fit indices evaluate completing models.	
	Convergent validity		To measure the validity of the constructs used in the framework.	The criteria for factor loadings should be 0.5 or higher, and ideally 0.7 or higher. Reliability of > 0.7 was used to assess the convergent validity.	
	Discriminant validity			Discriminant validity can be indicated by comparing the average variance extracted (AVE) for each construct with the corresponding square of the inter-construct correlations (SIC). An average variance extracted that is larger than the inter-construct correlations shows discriminant validity.	
Structural model	Level of significance	SEM using AMOS 21.0	Hypotheses testing	Level of significance P < 0.001 P < 0.01 P < 0.05	