HRD PROFESSIONALS' EXPERIENCE UTILIZING DATA ANALYTICS IN THE TRAINING EVALUATION PROCESS

by

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ABSTRACT

In the past, Human Research Development (HRD) professionals have faced barriers of gaining access to the data they need to conduct higher level evaluations. However, recent technological innovations have presented opportunities for them to obtain this data, and consequently, apply new approaches for the training evaluation process. One approach being used is the application of data analytics. Because organizations have begun to embrace its use, recent research activities in the literature have focused on the promotion of analytics versus the practical application of analytics in the organization. This study investigated how HRD professionals utilize data analytics in the training evaluation process. It contributes to the body of research on the practical application of analytics in determining training effectiveness. The Unified Theory of Acceptance and Use of Technology (UTAUT) and Sociomateriality served as the theoretical framework for understanding how HRD professionals use data analytics in the training evaluation process. To address the research objective, a qualitative descriptive design was employed to investigate the phenomenon of lived experience, how HRD professionals use data analytics in the training evaluation process. Data were collected through semi-structured interviews with six (6) participants who were front and center in the organization's transition to the analytics tool, Metrics That Matter (MTM), for evaluating training initiatives. The thematic analysis approach was applied. The study findings suggest three factors that influenced HR professionals to use human resource analytics, while revealing four ways they used those analytics in the training evaluation process. More importantly, findings from this study will provide training departments and HRD professionals recommendations for expanded job role and/or function descriptions, as well as best practices for incorporating data analytics in the training evaluation process.

CHAPTER 1 INTRODUCTION

An important function in Human Resource Development (HRD) department is the development, delivery, assessment, and evaluation of training programs to improve employee learning, performance, and the overall impact on organizational competitiveness after training is completed (Elnaga & Imran, 2013; Ross, et al., 2020; Swanson & Holton, 2009). HRD professionals are tasked with managing the training programs within the organizations by providing initiatives and solutions to improving employee performance and organization development (Hughes & Byrd, 2015).

The purpose of training programs has evolved over time from the 8th century BC to the current 21st century from the earlier goals of apprentice training to the training of large groups in an organization (Swanson & Holton, 2009). It is important to note that growth of civilization, the expansion of industries, and historical events played a significant role in development of training programs (Torraco, 2016). To illustrate, the training program timeline began with its earlier roots in Greek and Roman civilization through the system of apprentice training in the individual development of practical skills and trades; this earlier training program eventually evolved during the Middle Ages in the formation of craftsmen guilds establishing some of the early forms of training in the three levels of craftsmen workers that included the master, the journeyman, and the apprentice (Biech, 2008); the Middle Ages also marked a shift from trade development towards individual spirituality with the promotion of religious training on the Church teachings and rituals; another shift in training programs was during the 17th century for the establishment of educational and vocational training to stimulate intellectual growth of the masses; later, the Industrial Revolution marked an important shift of training programs towards technical training due to the growing demand for factory workers; the 19th century American labor movement established the development of job training programs by the growing manufacturing industries; and finally the 20th century marked the most significant change in training programs with the rise of corporate training due to companies seeking to equip the workers with knowledge and skills to propel the organizational goals (Swanson & Holton, 2009). The continued development and growth of corporate training has reinforced HRD's role in the organization (Hughes & Byrd, 2015).

The growth of corporate training has been pivotal in the evaluation of training programs as corporate leaders and training departments seek to measure the knowledge and skills acquired through their programs (Wang & Wilcox, 2006). The information derived from training evaluation offers organizations the opportunity to determine future training program needs (Biech, 2016). More importantly, the evaluation of training programs serves as a key function of the HRD professional and to this end, this function serves as the backdrop for this research study.

The term "evaluation" has different meanings for different people, across different disciplines. Specific to this research, the term is associated with organizational processes, initiatives, strategies, and systems (Russ-Eft & Preskill, 2009). Evaluation is a process that consists of assessing, reviewing, analyzing, and judging the importance of information gathered (Frye & Hemmer, 2012). One of the most important processes of HRD is training evaluation, which serves a major role in determining training effectiveness (Swanson & Holton, 2009). Training effectiveness is determined by measuring individual performance, training design, and impact on the organization during and after training (Alvarez et al., 2004; Devi & Shaik 2012; Paul, 2014). The continued success of a training evaluation process is crucial to the ongoing training program objectives, course design, instructional strategies, learning experience, facilitation, implementation, return on investment, business impact and performance value (McCain, 2016). The evaluation process acts as an essential thread connecting the relationship between employee performance and desired organizational outcomes (Phillips & Phillips, 2015).

Evaluation approaches were once prevalent in educational and military settings but around the 20th century these approaches soon took hold in corporate training (Branson et al., 1975; Clark, 2015). One specific approach was the ISD Model or ADDIE process that was created by the Center for Educational Technology at Florida State University which was originally designed for the U.S. Army (Branson et al., 1975; Clark, 2015). The acronym ADDIE represents the five steps in the training cycle; analyze, design, develop, implement, and evaluate (Biech, 2016). The application of the ADDIE steps would eventually spread throughout corporate settings which led HRD professionals' development of the evaluation process for their training initiatives (Clark, 2015).

Over the years, due to growing cognitive learning needs of learners and advancements in training delivery systems, the ADDIE steps have expanded into various approaches and models thus allowing organizations to customize the delivery of their training (Clayton, 2006). In

looking specifically at the evaluation step, HRD professionals have utilized several different training evaluation methods to determine the effectiveness of a training program (Topono, 2012). The most popular models utilized by HRD professionals over past decades have been Kirkpatrick's Four-Level Evaluation Model and Five-Level Return on Investment (ROI) Model (Topono, 2012). The Kirkpatrick's Four-Level Evaluation Model focuses on measuring four specific outcomes: reaction, learning, behavior, and results (Topono, 2012).

- Level 1 Reaction – this is the learner reaction to the training,
- Level 2 Learning – this is the acquisition of knowledge gained by the learner,
- Level 3 Behavior – this is what changed as result of the training, and
- Level 4 Results – this is the overall effect of the training on the business (Topno, 2012; Kirkpatrick & Kirkpatrick, 2006).

Whereas the ROI model consists of five-levels of evaluation (Phillip, 1999).

- Level 1 Reaction – focuses on the learner reaction to the training,
- Level 2 Learning – focuses on the acquisition of knowledge/skills gained by the learner,
- Level 3 Application – focuses on the application of the skills learned on the job,
- Level 4 Results – focuses on the overall effect of the training on the business, and
- Level 5 ROI – focuses on monetary benefits of the training (Lee & Pershing, 2008).

Even though these two models have been adopted by many HRD professionals we still see a need for a deeper approach to evaluating training effectiveness. In a recent Association for Talent Development (ATD) study that surveyed 779 HRD professionals it was shown that HRD professionals believe that there is a continued need for organizations to improve the effectiveness of their training effort (ATD, 2019). The study also concluded that 75% of the current HRD professionals' evaluations methods only exist at Levels 1 and 2, at least 54% of these professionals have done Level 3 evaluations, and that levels 4 and 5 lacks widespread use by these practitioners. HRD professionals have stated that an effective measurement of the training program is the application of acquired skills once the employee has returned to their job function and its results on the organization which is found in Levels 3 and Level 4 (Wang & Wilcox, 2006). If this is the case, why is there a lack in obtaining these forms of evaluation? As identified in the 2019 ATD report, the main barrier hindering HRD professionals for achieving this level of evaluation was the lack of access to the data they need to conduct higher level evaluations. In my assessment, to go beyond these traditional approaches the key for HRD

professionals to obtain a comprehensive evaluation depends on the opportunity to access and the analysis of the data.

Many traditional evaluation methods have relied on learner assessments, participant surveys, and the calculation of the return on investment (Potter, et al., 2000). However, due to the increased complexity of today's workplace, computer-based training options, and the use of technology there is a trend in adopting new approaches to assist with measurement and evaluation of training (Phillips, 2016). Some innovations that are propelling approaches are analytics systems and learning technologies. Some of the technology that has contributed to the shift in how HRD professionals implement training plans includes the utilization of electronic learning (eLearning), mobile learning apps delivered online, as well as learning management systems (LMS) (Ellis & Kuznia, 2014; Torraco & Lundren, 2020; Zarqan, 2017). Additionally, the increased calculating power of robust database systems such as human resource information systems (HRIS), cloud-based technology, and Artificial Intelligence (AI) systems has changed the traditional approach to training evaluation (Schryvers, 2020). Through these technologies' modified approaches have given HRD professionals the ability to assign metrics for learning outcomes and more importantly leverage the data to determine job performance after the training (Phillips, 2016). The emergence of these new technologies and approaches are equipping the HRD professionals with the capabilities to make more informed decisions in measuring the effectiveness of training programs (Waddill, 2018). One approach being used by HRD professionals is applying data analytics in the evaluation process; this approach combines data from these technologies, the use of metrics, and analytics software to gain insights into the training effectiveness (Giacumao & Breman, 2016).

In today's workplace, the application of analytic techniques is enabling HRD to obtain rich insights generated from the internal data such as employee satisfaction surveys, learner training assessments, and performance reviews (Marr, 2018). The process of applying analytics to data generated from these technologies and systems gives insights into understanding employee patterns of behavior, interaction, and job performance (Waddill, 2018). To assist HRD professionals in the process of analyzing data, there has been an increase in companies developing an array of analytic based systems (Davenport & Kudyba, 2016). The analytical systems include reporting software, to survey management applications, to performance and assessment feedback software, to data visualization software. For example, Valtera a program

which calculates employee surveys gives HR professionals the capabilities to link internal support systems of coaching, mentoring, feedback, and benefits as strategies for employee engagement solutions. Another program called Metrics that Matter (MTM) evaluates training by providing benchmarks, surveys, reports, and predictive forecasting. MTM assists HR professionals with the capacity to generate and track the organizations key performance indicators (KPI), generate employee surveys, and pull all of the organization's internal information from the LMS and HRIS systems into data for making informed business decisions. The primary focus of these tools is the systematic collection and analysis of data across the organization for evaluating training results (Torraco & Lundren, 2020).

For the purpose of this research study, the term "analytics" will be used to refer to the process of converting data into useful information to improve individual and organizational performance (Rushton, 2019). The use of analytics offers the capacity to further assist in the evaluation process (Sclater, 2017). As a result, it has increased HR reach for continued improvement training and development (Edwards & Edwards, 2019). According to Angrave (Angrave et al., 2016, p.2), "Analytics has been described as a 'must have' capability for HR professionals; a tool for creating value and a pathway to broadening strategic influence of the HR function." Analytics offer HRD professionals' new approaches to the evaluation of training effectiveness by identifying gaps in learning and performance (Marler & Boudreau, 2017). As more HRD professionals use analytics, it is important that evaluation methods in conjunction with analytics provide practitioners with solutions, best practices, and innovative approaches to evaluate training initiatives (Ellis & Kuznia, 2014).

1.1 Background and Problem Context

Documented in the Association for Talent Development (ATD) 2019 report, the main barrier facing HRD professionals is the lack of access to data they need to conduct a higher level of evaluations (ATD, 2019; Choudhury et al., 2019). However, organizations have begun adopting new approaches to assist HRD professionals with the evaluation of training programs, leading to new approaches in the process (Phillips, 2016). The process of analyzing and extracting the useful data obtained in the training initiative offers a new approach in the evaluation process. Since the early 2000s, the collection and utilization of data has contributed to training effectiveness (Lawler & et al., 2004). By embracing data, organizational interest in the

use of analytics has grown, however, the HRD framework for applying analytics remains in its infancy as these practitioners navigate the waters in its application (Pape, 2016). As these analytics products become available HRD professionals are acquiring new skills on the job training in the areas of data science by gaining an understanding of the data possibilities (Marr, 2018). Getting comfortable with using data through trial and error will only make the HR professionals more savvy data experts.

Linking employee behavior, performance, and policy to business outcomes through analytics could be a huge benefit for HRD. Unfortunately, organizations are struggling to make the use of analytics in HRD a reality (Heuvel & Bondarouk, 2017). "The utilization of analytics to understand the impact on the organization's performance is a powerful way for HRD to add value to the organization" (Lawler et al., 2004, pp.29).

Despite the popularity of analytics, the focus of research in this area has been the promotion versus how to successfully leverage it, which leaves a research gap (Angrave et al., 2016; King, 2016). According to Marler and Boudreau (2017), a review of existing literature on the topic of HRD use of analytics, they found that previous studies offered very limited scientific evidence. The major conclusion that emerged from their research was the need for more scientific research relating to the use of analytics in HRD and its impact on the organization (Marler & Boudreau, 2017). Therefore, the application of analytics in the evaluation process would allow HRD professionals to measure and track performance metrics that were once inaccessible (Lawler et al., 2004). ***Existing literature focuses on the promotion of analytics in the organization versus the practical application of analytics by HRD professionals to determine training effectiveness. As HRD professionals expand their efforts to incorporate analytics, further research is needed to demonstrate analytics potential impacts on accurately and systematically evaluate training.*** In addition, there is a lack of research that demonstrates how HRD practitioners are applying new forms of evaluations in the training process (Bell et al., 2018; Griffin, 2011).

1.2 Purpose

Training evaluation is increasingly becoming a high priority for organizations and research is needed to examine HRD professionals' use of different evaluation approaches to address organization needs (Bell et al., 2018). The big data and the data analytic process offer

practitioners a fresh opportunity to forge ahead with new approaches for training evaluation. The availability of more data and the use of analytic systems has equipped organizations to measure and track the evaluation process better than ever before (Schryvers, 2020). This investigated how HRD professionals utilize data analytics in the training evaluation for the purposes of contributing to research on the practical application of analytics in determining training effectiveness.

1.3 Research Questions

Embracing technology can offer HRD the capacity to enhance its functions, and even increase the effectiveness of HR professionals and the overall organization (Waddell, 2018). As the key stakeholders for gauging the training effectiveness, a spotlight must be placed on their role in the training evaluation process as well as the use of evaluation tools/systems for accomplishing this task. To this end the following research questions are essential to this study.
Q1: What factors influenced HR professionals to use HR analytics in the training evaluation process?
Q2: How do HR professionals utilize HR analytics in the training evaluation process?

1.4 Significance

An effort to link research and its practical application to inform HRD professionals about effective practices is important (Sanders et al., 2008). Despite the popularity of analytics, most of the literature focuses on the promotion of analytics instead of how to successfully apply analytics as an effective training evaluation approach (Angrave et al., 2016; King, 2016). When looking at the impact of analytics on the T&D function, there is obviously an urgent need for an empirical study investigating how practitioners apply and utilize data analytics in training evaluation. This study is significant in bridging the gap between HRD research and practice with respect to training evaluation. It addresses practitioner experiences around the application of data analytics in training evaluation. Research questions in this study looked to uncover practitioners' practices and procedures related to their usage of data analytics. These questions include, How HR professionals use analytics in the training evaluation process; What steps T&D takes to implement analytics in the evaluation process; What training professionals do to prepare

for data analytics use; and, What results analytics render HR professional compared to previous evaluation approaches. Presenting these discoveries around practitioners' practical application enhances the body of research surrounding HRD implementation of analytics and new approaches to the training evaluation process. An essential part of any organization is the development of policies which gives guidance to the employees in their daily operations but to establish these policies it is best to understand the practices and procedures conducted by those employees. The roadmap to craft the policies for any organization to run smoothly is in understanding and providing the best practices in the day-to-day operations. This research sought to provide the procedures and best practices HRD professionals applied in the use of data analytics in the evaluation process.

This study was based on a pilot training initiative conducted with the Organization Learning & Development Department (OL &D) within a Midwest regional hospital. The training was for front-line leaders and mid-level managers, and the goals were to establish an ongoing training program for promoted leaders, and for leaders hired directly into the company. The learning objectives from this training include the following: (a) Identify ways to overcome challenges; (b) Recognize the leader's role as a motivator, coach, supporting management, reporting, and in policy; (c) Identify personal tendencies toward leadership and management. (d) Demonstrate what is expected of their leadership role in the organization; and (e) Articulate their accountability within their leadership markets. The OL&D was tasked with determining the effectiveness of the training initiative and identifying new approaches to evaluating this initiative for future use. The department broke away from the organization's traditional training evaluation approach that utilized Kirkpatrick's Evaluation Model, which did not yield results for determining effectiveness. As an alternative, the OL&D aligned the department with new analytical approaches to training evaluation. They began using an innovative analytic tool called Metrics That Matter (MTM), for evaluating this training initiative. MTM is measurement platform that informs stakeholders on business performance and training initiatives by combining both internal and external data and statistics. MTM was created by the company Gartner Inc. but later sold to the Canadian based company Explorance Inc. MTM software evaluates training through talent management tracking, benchmarking, surveys, integration strategy reports, predictive forecast reports, as well as performance trends and other reports. To evaluate program effectiveness, the tool also tracks the following metrics such as Perceived

Value, Overall Learning, Business Results, Job Impact, and Net Promoter Score. The participant organization offers a unique perspective on how an HRD department engages in data analytics in training evaluation while addressing the problem of extracting relevant insights from the data to evaluate training effectiveness. This pilot training initiative sought to provide evidence for the use of data analytics as provided by the practices and procedures of those HRD professionals.

As stated, existing research has not looked to see how data analytics has been leverage in the day-to-day operations with those practitioners. Instead, there have been existing research studies that have been on the promotion of the use analytics and how it could be beneficial to organizations. This research presents analytics use through the viewpoint of various HRD professionals participating in the study by obtaining insights into behaviors, processes, difficulties, and adoption of a new data analytics system. This research adds to the existing body of research on data analytics uncovering how it is applied in the practical use by these HRD professionals as well as investigating if its usage offers overall improvements in an organization. The implementation of qualitative descriptive methodology assists in examining the HRD professional utilization of the data analytics to support an impactful evaluation process. The utilization of the qualitative descriptive methodology gives the researcher the opportunity to explore the participant experiences and factors related to this phenomenon (Kim et al., 2016). This type of mode of inquiry allows the researcher to formulate a conclusion based on the participants' viewpoints.

1.5 Theoretical Framework

The Theoretical framework serves as an organizing structure for research design (Miles et al., 1994). The lens for gaining these insights regarding this phenomenon is specified from the vantage of my theoretical view through the theories, Unified Theory of Acceptance (UTAUT) and Use of Technology & Sociomateriality. UTAUT and Sociomateriality are central to this study and serves as the framework for understanding HRD professionals use of data analytics in the training evaluation process. The UTAUT served as a baseline to understand the factors that directly influence the behavioral intention of the participants (HRD professionals) to use the data analysis technology. Much of the UTAUT concepts specifically the performance expectancy has some roots in Victor Vroom's 1964 Expectancy Theory of Motivation (ETM). However, the motivation of individual performance, personal goals, and sought rewards highlighted in ETM

were not the contributing factors for understanding participants behaviors for using information technology. While technology usage sits at the central position to UTAUT, it is more important to the research to understand the behavioral intentions of those utilizing this technology and the decision-making environment (Cohen, 2009). Additionally, the Sociomateriality theory offers an inversion of the research orientation away from the technology but towards the human agency in the use of the technology focusing attention on what people do with a particular technology in their ongoing work activity/practices (Orlikowski, 2000). The Sociomateriality theory will provide insight into HRD professionals' in-practice use with the technology to determine established processes, procedures, collaboration, and best practices.

1.6 Scope of the Study

This research study aims to determine how HRD professionals utilize data analytics in the training evaluation process in determining training effectiveness. The evaluation approach under investigation includes the use of data analytics as part of training evaluation. The study participants are from the hospital's staff in the Midwest Regional OL&D department. The department's staff include the curriculum manager, Instructional Designers, Program Manager, Training Director, and HR Training Analyst. The participants participated in a 60-90-minute individual, and additional 60-90-minute focus group interview. All the interviews took place face-to-face and/or virtually (via phone conference, skype, or WebEx). The individual participant interview covered the following topics: acquired data science skills, roles and responsibilities, previous and current evaluation process, intentions to accept and use analytics, the application of data analytics, collaboration, roll-out, and outcomes. The focus group interview covered the following topics: testing and delivery, identifying problems and solutions to the new evaluation process, best practices, determining program effectiveness and future trends in the industry.

1.7 Assumptions

Assumptions of this study:

1. HRD professionals (training and program managers, instructional designers, system managers, eLearning developers) have access to data in the training evaluation process.
2. Training managers and trainers are the key members using analytics on a regular basis.

3. Those involved in the training evaluation process have obtained knowledge and skills to conduct data analytics.
4. The mandate to explore and utilize analytics in the training evaluation process is strongly supported by top leadership in the organization.
5. The transition to utilize analytical tools across the HRD Department initially received less acceptance.

1.8 Limitations

Limitations of this study:

1. Even though employees/trainees are the key audience during the evaluation process, their voice will not be represented in this research.
2. Organizations vary in how they decide to use technology.
3. Metrics that Matter (MTM) is one of many analytic tools on the market and does not represent the only solution.

The findings in the research study cannot be generalized to other T&D departments who implement analytical tools in their training evaluation.

1.9 Delimitations

The Delimitations of this study:

1. This study will investigate how the Organization Learning & Development Department is using MTM, the analytic tool, in the evaluation of their training initiative.
2. Participants in this study are members of the HRD Department who used MTM during evaluation phase.
3. This study will investigate the perceptions and/or experience of the HRD professionals' usage of MTM in the training evaluation.

1.10 Definitions of Key Terms

Analytics is the process of converting data into useful information to improve productivity and performance (Rushton, 2019).

eLearning is the utilization of computers and internet/intranet networks to support the learning process, offering the learner the means for outside training anywhere at any time (Rosenberg, 2001).

Evaluation is a process that consists of an assessing, reviewing, analyzing, and judging the importance of information gathered (Frye & Hemmer, 2012).

Human Resources Development (HRD) is a framework to improve employee performance through training (Swanson & Holton, 2009).

Metrics are measurements; used to identify whether the situation or circumstance is improving or getting worse (Schryvers, 2020).

Training "is a planned project directed to shape learning by assisting individual in acquiring a new skill or new knowledge, in a specific way (Rosenberg, 2001, pp.4)."

Training and Development (T&D) is the use of activities to enhance individual abilities for the purpose of improving job performance (Swanson & Holton, 2009).

Training Evaluation the process of collecting & analyzing data to determine to what extent, the training objectives were achieved (Alyahya & Mat, 2013; Boulmetis & Dutwin, 2000).

Transfer of Training is the successful application of learning, trained skills, and behaviors acquired during training, to the work environment (Saks & Burke, 2012).

Training Technologies are tools specifically used in the training process, including but not limited to the delivery, metrics, evaluation, and reporting (Sloman, 2002).

Unified Theory of Acceptance and Use of Technology (UTAUT) explains how the individual behavioral intentions influence the use a technology and how the surrounding conditions contribute to the determine technology use. UTAUT utilize four predictors of behavioral intention to use the technology; self-efficacy, performance expectancy, effort expectancy, and social influence (Williams et al., 2015)

1.11 Summary

This chapter provided an overview of this research project, and includes the background, problem, purpose, significance, research questions, and definitions. The key thought for this research is the fact that there has been a recent shift in organizational exploration into analytics utilization in training evaluation process (Hoffmann et al., 2012). The next chapter will outline the following: a review of literature that highlights the use analytics by HRD professionals,

demonstrate how the unified theory of acceptance and use of technology (UTAUT) as well as the Sociomateriality theory assists as framework for research into the use or application of technology in an organization, and present a history of evaluation models and training evaluation approaches over the years.

CHAPTER 2 LITERATURE REVIEW

The aim of this research is to investigate how HRD professionals utilize data analytics in the training evaluation process. This study shares research on the practical application of analytics to determine training effectiveness. As outlined in Chapter 1, there has been a recent shift in approaches into data analytics in the training evaluation process. This chapter provides a review of existing literature on the use of data analytics and a history of training evaluations. Additionally, this chapter will provide the rationale for the use of the theoretical frameworks UTAUT and Sociomateriality theory for understanding HRD professional perceptions, usage, and implement of data analytics in the training evaluation process.

2.1 Training Evaluation

Training evaluation is an important job function of the HRD professionals (Hughes & Byrd, 2015; Swanson & Holton, 2009). It is through the training evaluations that the HRD professionals demonstrate to the organization the value of the training interventions (Wang & Wilcox, 2006). As the training initiatives or programs are developed those HRD professionals ultimately seek to demonstrate the programs value to the organization (Alvarez et al., 2004; Devi & Shaik, 2012; Paul, 2014). HRD professionals look to evaluation techniques which depend on the evaluation models they have chosen to conduct the evaluation of the training initiative (Alvarez et al., 2004). It is through the selection and usage of the evaluation models that can help determine the training effectiveness (Devi & Shaik, 2012). The training evaluation process acts as an essential thread connecting the relationship between employee performance and desired organizational outcomes (Phillips & Phillips, 2015). To gain insights into the training evaluation process one must understand what training evaluation entails and how the use of evaluation models has evolved in the training evaluation process.

In training evaluation process, the term “training evaluation” also has a range of meanings. There have been many who have defined training evaluation as process. According to Fryer and Hemmer (2012) this process consists of an assessing, reviewing, analyzing, and judging the importance of information gathered in the process. Wang and Wilcox (2006) view it as a systematic process that can be divided into two categories of formative and summative

evaluation; the formative evaluation provides information on improving the program design and development (content, materials, learning objectives) whereas the summative seeks to identify the benefits of training to individual on-the-job performance and organizational goals. Alternatively, Saks and Burke (2012) describe training evaluation as a systematic process of collecting data to be used in an effort to determine the effectiveness of the training program and to make decisions about training. In another view, "training evaluation" has been defined as methodological approach for measuring individual and organizational outcomes. Training evaluations have multiples goals, one is to examine if the training initiative assisted employees to measure the transfer of knowledge & skills onto the job, and the second to determine the extent to which the training program met the organizational goals (Alvarez, 2004). Similarly, Topno (2012) views training evaluation as having the purpose to determine if the program has met its stated performance goals and objectives of the individual. These definitions demonstrate how the training evaluation can range in meaning from being a process, a way to measure a program's met objective, measuring individual performance outcome, and measuring organizational goals. Additionally, we see these varied meanings permeate in the evaluation approaches or models used by HRD professionals. The following section will highlight many of the frequently used models in the training evaluation process.

2.2 Earlier Training Evaluation Approaches

To understand training evaluation, one must first look at the influences of learning theories and the instructional system development (ISD) models have had on the evaluation process. During the 1950s and 60s, behaviorists and learning Psychologists such as Robert Gagne, B.F. Skinner, Benjamin Bloom, and Jean Piaget, postulated that there was a need to customize learning (Chadha, & Kumail, 2002). These psychologists developed many of the learning theories which became the foundation of instructional design, in both education and training. Learning theories such as behaviorism, cognitive learning, and constructionism describe how an individual learns, while instructional design theory explains how to teach using any of the previously listed theories (Reigeluth et al., 2017). The learning theories are a set of principles that explain how individuals acquire, retain, and recall knowledge. They can be used as guidelines to help select the instructional models, tools, techniques, strategies, and evaluation processes that promote learning. These theories provide some key principles which offer

important factors in determining how the individual learns and processes information. (Ahmad et al., 2012).

The learning theories are the foundation to the Instructional System Design (ISD). "ISD pulls together the relevant technology, learning behavior, and learning strategies to create training. It is the science that combines learning theories, learning strategies, and technology (Chadha & Kumail, 2002, pp.140)." ISD was a result of various types of research undertakings, and it would later become the bridge for linking training to learning. Rosenbery (2001) states, "training is a planned project directed to shape learning by assisting individuals in acquiring a new skill or new knowledge, in a specific way (p. 4)." This ISD model incorporates evaluation throughout the learning process and is rooted in learning theories and principles. Torraco (2016), explains this association of ISD Model with training evaluation, "

> the ISD Model emphasizes the importance of a needs assessment before training and evaluation after training. The ISD Model is associated with the acronym ADDIE: analyze, design, develop, implement, and evaluate. These are the five phases of the ISD model (Torraco, 2016, pp. 3).

ADDIE was the catalyst that sprung forth multiple models which led HRD professionals' development of the evaluation process for their training initiatives (Clark, 2015).

The 1960s marked the development of one of the earliest and widely accepted training evaluation approaches which was called the Kirkpatrick's Four-Level Evaluation Model, created by Donald Kirkpatrick (Kirkpatrick & Kirkpatrick, 2006; Topno, 2012). During the late 1960s and 1970s there was rise in published journals and books dedicated to training evaluation and many researchers believed that existing models fell short in providing tools that guided organizations in their evaluation systems and procedures (Tripathi, 2017). Using a systematic approach, Daniel Stufflebeam created the system-based evaluation model called CIPP (Context, Input, Process and Product). Its purpose was to provide an analytic set of steps (planning, structuring, implementing, receiving) to aid in decision making (Tripathi, 2017). In 1970, as a result of the published works by Peter B. Warr, Michael W. Bird, and Neil Rackham, the CIRO (Context, Input, Reaction, Output) Evaluation Model was introduced. This four-level model is another system-based approach. Its purpose was to account for measurements taken before and after the training as seen from the perspective of the organization trainer and learner (Topno, 2012). One of the criticisms about this model was that it virtually ignored desired behavior

change. Hamblin (1974) introduced his model called Hamblin's Five-Level Approach. He improved upon CIRO by inserting evaluation of desired behavior change in the process. He borrowed Kirkpatrick's first three levels of evaluation (Reaction, Learning, Behavior), and divided Kirkpatrick's fourth level (Results) into two separate levels, which consisted of Level 4 (Organization) and Level 5 (Ultimate Value) (Lee & Pershing, 2008). The Level 4 (Organization) focused on the learner performance impact on the organization, while Level 5 (Ultimate Value) focused on the financial impact on the organization, after the training.

Between 1970 to the 1980, HRM became a popular research topic and teaching pursuit in academia (Kaufman et al., 2014). As a result of this popularity HRM was regarded as highly favorable value add, which afforded more funds being allocated towards T&D activities. In turn, more allocations of money required higher accountability for ROI. Top management sought more evidence of desire performance outcomes (Kaufman, 1999).

A few evaluation models were developed in hopes of demonstrating performance and cost benefits of training programs. In the area of performance improvement, an emphasis was placed on measuring performance, not only internally but also the organization's external impact (Kaufman et al., 1996). One evaluation model that emerged in 1994 was the Roger Kaufman and John M. Kellers, Kaufman Five Level Evaluation Model. It too was based on the Kirkpatrick's Model, with a few modifications, and an added fifth level. The model creators believed that the Kirkpatrick's four level model was missing elements to tie evaluation to organizational resources and customer impact (Lee & Pershing, 2008). Unlike Kirkpatrick, Kaufman and Keller focused on planning, management, and evaluation (Kaufman & Keller, 1994). Kaufman Five Level Evaluation Model included a divided Level 1 into two parts, Input and Process. This focused on the training materials and delivery; Level 2 Acquisition – this focused on acquiring new knowledge and skills; Level 3 Application – this focused on the application of knowledge/skills on the job; the Level 4 Results – this focused on the effects the training; and in Level 5 Responses – this focused on the training impact on customers and society as a whole (Kaufman & Keller, 1994).

To provide additional proof of cost benefits, IBM Corp developed the three-stage system-based evaluation model called IPO (Input, Process, Output). Similar to the CIPO (Context, Input, Process, Product) Model, the IPO Model provides a set of steps to aid decision-making. It has three stages; Input – this focuses on training needs, materials, and delivery; Process – this

focuses on the instructional development; Output – this focuses on reactions to and results of the training (Bushnell, 1990).

A popular model, also dedicated to cost benefits, was called the Phillip's Five Level ROI, developed by Jack Phillip. It offered a practical way to forecast the potential payoff prior to the commitment of funds (Choudhury & Sharma, 2019). This ROI model consists of 5 levels of evaluation: Level 1 Reaction – this focused on the learner's reaction to the training; Level 2 Learning – this focused on the acquisition of knowledge/skills gain by the learner; Level 3 Application – this focused on the application of the knowledge/skill on the job; Level 4 Results – this focused on the overall effect of the training on the business; Level 5 ROI – this focused on monetary benefits of the training (Lee & Pershing, 2008).

2.3 Computer-Based Training (CBT) Impact

The advent of the personal computer deployed in offices led to the use of **computer-based training** (CBT) by means of floppy disc and CD-ROM (Rosenberg, 2001). Trainers used CBT when there were either numerous people to train over a very short period of time, or a large number of people to train over a long period of time, but the content was not going to change (Rosenberg, 2001, pp.23). One of the earliest forms of CBT was the PLATO (Programmed Logic for Automatic Teaching Operations) system, created by a team of graduate researchers at the University of Illinois. PLATO was a mainframe-based system that became a huge success at the time, in educational institutions and businesses, but the system required the use of its own proprietary hardware and software. This would later lead to its demise by the early '90s (Rosenberg, 2001). By the late '80s, it was the advent of the world wide web (1989) that laid the foundation for today's learning technologies (Taylor, 2017). The internet changed everything by becoming the defining technology in the training profession. Training could now be delivered through the Internet (external network) and Intranet (organization's internal network): Internet developments transitioned training technologies into a new age (Sloman, 2002). During the dotcom boom of the 2000s, several learning companies such as DigitalThink, Knowledge Planet, and Netg offered corporations the training technology solutions of "learning portals" (Rosenberg, 2001). These solutions became known as **Web-based Training** (WBT). This technology is an internet version of CBT, which included any learning materials accessed and monitored by using the internet (Chadha & Kumail, 2002).

By the early 2000s training became more advanced with the use of computers which resulted in independent and just-in-time-training delivery options. “The emergence of the Internet and computer-based training during this period provided the foundation for today’s elaborate e-learning systems (Torraco, 2016, pp.4)”. This form of training that was beyond the limitation of the classroom is called eLearning which utilizes personal computers and internet/intranet networks thus offering the learner the means for learning outside the training facility at anytime and anywhere (Rosenberg, 2001). Another form of training that reached beyond the standing four walls of classroom was MOOCs or a massive open online course. MOOCs were developed as an open access of instructional content on a specific course or topic that originated primarily in the domain of higher education (Baturay, 2015). However, MOOCs have started to trend into corporate training structure as companies have moved towards the utilization of the large selection of available instructional content that aligns with their aims for employee development (Dodson & Kitburi, 2015). These new forms of delivery reveal a need for more advanced methods to measure the behavioral and financial results of training (Torraco, 2016). This technology has had a positive effect on internal operations, thereby changing the way HRD professionals execute human resource plans, conduct training, evaluate performance, and provide benefits to their employees (Zarqan, 2017). The emergence of technology in training gave the organization the means for developing knowledgeable employees (Sloman, 2002). Technologies specifically used to conduct training had come to be refer to as “learning technologies” and/or “training technologies”, whose distinction is that the learning lies in the domain of the individual or employee, and the training lies in the domain of the organization (Sloman, 2002).

2.4 Emerging Immersive Training Technologies

Additional developments in evaluations models during the early 2000s included, The Brinkerhoff Model which was developed by Robert O. Brinkeroff in 2003, and the Anderson Model of Learning Evaluation developed in 2006 by the Chartered Institute of Personnel and Development. The Anderson Model consist of three stages: Stage 1 - determines the current alignment of training against strategic priorities for the organization; Stage 2 - determines the contribution of training and learning to the business goal; Stage 3 - Establishes the most relevant approaches for the organization which may include the RIO, Return on Expectation (ROE),

Benchmarks, and Capacity measures (Deller, 2020). Even though the Anderson Model didn't gain the same popularity as Kirkpatrick's model of evaluation, it did introduce a new approach to evaluating training programs from a holistic view. This approach was a view from a high level of the organization strategic alignment that included measurements, benchmarks, and metrics.

The other model used during the early 2000s was the Brinkerhoff model. The Brinkerhoff Model sometimes called Brinkerhoff's Success Case Method (SCM) evaluation, which focused on a qualitative analysis approach derived from the narratives and stories to judge the overall success of the learning program (Downes, 2015). The qualitative analysis in this evaluation model relied on the following steps: Step 1 – identify the goals of the learning opportunity and connect them to the business needs; Step 2 – survey the participants to identify best and worst cases; Step 3 – through these cases obtain the evidence, Step 4 – Analyze the data, Step 5 – draw conclusion and communicate the findings. In the Anderson Model, the focus is on the alignment of the training programs objectives with the organization's strategic priorities and goals (Deller, 2020). Up to this point, the primary emphasis was on individual performance as well as the cost benefits to the organization. Storytelling is at the center of the Brinkerhoff's SCM model by offering a quick evaluation on the success or failure of the program through the short interviews with a few trainees represented in training. By 2009, The Brinkerhoff SCM Model had gained some success as a popular evaluation methodology for training (ASTD, 2009). However, years later and due to the familiarity with a certain model, the HRD professionals shifted their preference and revisited Kirkpatrick as the evaluation approach that helped in their efforts to determine participant reactions and learning outcomes (ASTD, 2016). **Table 1** gives a comparison view of how these above evaluation models align under the evaluation levels: analysis, design, development, instruction, and evaluation. In review of these various evaluation models, we see a variation of approaches that emphasize either the individual's reaction to the training; the acquisition of the learning; the performance or application on the job; the organizations return or result from the training, and its strategic alignment to the training. The CIRO model appears to have the best approach because it addresses evaluation at the beginning and at the end of the training. It also highlights the learner performance and organizational results. The only component missing in this model is the evaluation of the business impact as it relates to the ROI. It's not until the present day we see an effort to merge all the components into all-inclusive evaluation through analytic.

Table 1. A Comparison of models and Evaluation Approach

Evaluation Categories & Descriptions	1959 Kirkpatrick Four-Level Approach	1960s Stufflebeam CIPP Model	1970 Warr, Bird, & Rackham CIRO Approach	1974 Hamblin Five-Level Approach	1990 IBM IPO Model	1994 Kaufman Five-Level Evaluation Model	1995 Phillips Five-Level ROI Model	2003 Brinkeroff Success Case Method (SCM)	2006 Anderson Model of Learning Evaluation
Needs Assessment Activity prior to the training. Determine the need for the training		Context	Context		Input	Input Process			Determine Alignment Determine Business Goals
Design & Planning, instructional strategies		Input Process	Input		Process			Learning Goals	Approaches
	Reaction		Reaction	Reaction			Reaction	Reaction	
	Learning		Outcome Immediate	Learning		Learnin	Learning		
Application & Performance after the training	Behavior	Result	Outcome Intermediate	Behavio		Application	Application	Cases	
	Results		Outcome Ultimate	Resul	Output	Results	Business Results ROI	Analysis Result	Benchmarks Results
Impact on external customers or clients				Ultimate Value		Customer Response			

2.5 Early Measurement and Metrics Developments in Human Resources

During the 1980s and 90s, HR was recognized as a core function that could contribute to organizational effectiveness through its practices in training, hiring, and management (Ulrich et al., 2015). One of the key HR practices contributing to organizational effectiveness has been the collection and utilization of data on its efficiency (Lawler & et al., 2004). This original notion of measurements and metrics in HR can be traced back to the 1984 published works of Jac Fitz-enz titled, *How to Measure Human Resources Management*, in which he proposed a set of utilized HR metrics and formulas (Marler & Boudreau, 2017). A further contribution to HR metrics, was the creation of the balanced scorecard, introduced by Robert S. Kaplan and David P. Norton in 1996. The balanced scorecard enabled HR to establish performance indicator metrics such cost of hire, time to fill a position, and as employee absence rate. Additional indicators included customer satisfaction, employee development, process effectiveness, employee development, and financial performance (Kaplan & Norton, 1992). The utilization of scorecards provided a fundamental change in how companies measured performance with strategic goals of the organizations as the driving force (Kaplan & Norton, 1996).

2.6 Beyond Traditional Evaluation Practice

I have asserted that this study is situated in the investigation of the use of technology in the traditional evaluation process, but it is important that I also give attention to some other approaches that goes beyond the traditional evaluation practice. One approach to evaluation is looking at performance as the means for true evaluation rather looking to training as the source for evaluation. The analysis of the existing and desired levels of performance presents the opportunity to identify the causes for the performance gap which leads to a wide range of interventions for improving performance (Stolovitch & Keeps, 2004). This approach is called Human Performance Technology (HPT) which has been described as a systematic approach to improving productivity and competence related to the performance of people at work (Tiem et al.,2012). The founders Thomas Gilbert, Joe Harless, Robert Mager, and Geary Rummler believed that understanding the cause of a problem identified in the performance should drive any solution (Wilmoth et al., 2014) As a result the training and other interventions are by products to solving the performance gaps (Stolovitch & Keeps, 2004). Understanding

performance begins with understanding internal and external components; the environment, the customers, the employee, the manager, the organization, and the stack holders (Addison & Wittkuhn, 2001). The HPT model looks to address these internal inputs and external outputs.

Another nontraditional evaluation approach is the Blue Marble Evaluation, which was developed by program and project evaluation scholar, Michael Quinn Patton. This form of evaluation is a wholistic perspective that looks at the interconnection of global and local challenges such as innovation, inclusiveness, policy changes, and environmental ecosystems which would lead to a more responsive and adaptive changes in our world conditions (Patton, 2016). The principle is to design interventions that look beyond traditional boundaries looking through a complex lens and working with stakeholders across landscapes thus pursuing global solutions rather than isolated solutions (Patton, 2020).

2.7 The Birth of Human Resource Analytics (HRA)

Technology has been one of five factors driving the change and the future of HRD (Torraco & Lundren, 2020). Innovations on the internet and learning technologies represented a further HRD shift toward embracing data (Li, 2016). HRD interest in data analytics has been driven by the increased computer processing speeds, and the availability and accessibility of data (Huselid, 2018). Linking employee behavior, performance, and policy to business outcomes through analytics could be a huge benefit to HRD. According to Lawler, Levenson, and Boudreau (2004) "the utilization of analytics to understand the HR impact on the organization's performance is a powerful way for them to add value to the organization" (p.29). The advent of data-driven technologies has given organizations the capabilities to access and apply data analytics to various human resource (HR) practices, including learning, hiring, performance, and managing talent; however, the research in its application lags behind (Yoon & Seung Won, 2018). These data-driven technologies have the potential for the use of an automated evaluation systems to be used in the planning process and in the data collection process to assist HRD professionals in determining the effectiveness of training initiatives (Eseryel, 2002). However, the framework for applying analytics and the utilization of data to improve HRD functions is still in its infancy and organizations are still struggling to make analytics use a reality (Heuvel & Bondarouk, 2017; Netten, 2019; Pape, 2016).

2.8 Components of HR Analytics

Almost everything we do creates a digital trail, whether we are web browsing, using social media, or making online purchases (Marr, 2018). The data tracking of our digital footprints has permeated across the different business sectors. Big data, or a vast quantity of data and information is being collected through various sources and is also being used in every stage of employee life cycle as well as business life cycle (Hangal & Kumar, 2018). Big data is not just big, but it is unstructured, messy, and is arriving at a speed that requires untraditional means for collecting and processing (Delen & Ram, 2018). The collection of data in the business context offers HRD professionals an increasing ability to gather insights, evaluate the business impact, improve operations, and achieve organizational goals (Marr, 2018). However, the interpretation of the results of big data is a challenging task (Netten et al., 2019). HR analytics is a new area for organizations; the volume of data is too big, the velocity of data can be overwhelming, the variety of data is broad, and the veracity of the unstructured data is messy (Lui et al., 2020). To overcome these challenges with analytics, organizations are moving towards the development of well-thought-out strategies for handling "Big Data" so that it can be converted to actionable insight (Delen & Ram, 2018). Over the years a range of data analysis techniques have been developed to focus on performing tasks such as classifying, associating, clustering and searching big data results (Netten et al., 2019). The data analysis process requires data mining, metrics, measures, and modeling which falls under a range of various analysis components (Liu et al., 2020). Lunsford (2019) describes these components as the three levels of analytics: Descriptive, Predictive, and Prescriptive. The descriptive analytics focuses on producing information that reports a situation such as past and current performance of the business decision (Kapoor & Kabra, 2014; Lunsford, 2019). Descriptive analytics answers the questions, what happen? or what is happening? (Delen & Ram, 2018). Descriptive analytics is a first level and involves the use of data visualization, reports, drilling-down, dashboards / score cards, and SQL Queries (Mohammad, 2019). Diagnostic analytics is an extension of the Descriptive analytics, it answers the question, why did it happen? and uses techniques of visualization, drilling-down, and data mining (Delen & Ram, 2018). The second level of analysis is predictive analytics uses past data to make prediction of the future outcome by using the technique of forecasting (Lunsford, 2019; Mohammad, 2019; Evans, 2015). Predictive analytics answers the question, what will happen? (Delen & Ram, 2018). The third level of analysis is Prescriptive analytics which provides

organizations guidance for their decision making using linear programming, simulations, creating mathematical modelling (Mohammad, 2019; Davenport, 2015). Prescriptive analytics, answers the question, what should I do? (Delen & Ram, 2018). Prescriptive analytics is used to identify the best alternatives to minimize or maximize some objectives Kapoor & Kabra, 2014). **Table 2** gives an overview of these levels of analytics.

Table 2. Levels of Analytics

Level 1	Level 1 – extension	Level 2	Level 3
Descriptive	Diagnostic	Predictive	Prescriptive
What should I do? Why should I do it?	Why did it happen?	What will happen? Why will it happen?	What should I do? Why should I do it?
Helps solve well defined business problems and opportunities.	Helps in taking proactive changes.	Provides accurate projections of future outcomes	Helps with future business decisions and actions

Analytics produce a range of outputs and have moved to become an increasing part of the HR function (Netten et al., 2019). Developing this new breed of HRD specialists who are capable of performing HR analytics is a must priority of organizations (Kapoor & Kabra, 2014). As HRD professionals continue to gain the skills and knowledge around analytics and understand the challenges of big data analysis there needs to be research that provides examples of its application in action (Angrave et al., 2016; King, 2016). HRD professional's application of analytics provides an understanding of the outputs and helps prospective users know how analytics might support the needs of individuals and organizations (Lunsford, 2019).

2.9 Research Gap: Lack of Empirical Evidence

Despite the popularity of analytics, most of the literature focuses on promotion versus how to successfully leverage it, therefore leaving a research gap in its practical application

(Angrave et al., 2016; King, 2016). According to Marler and Boudreau (2017), a review of existing literature on the topic of HR analytics, found that previous studies offered very limited scientific evidence. The major conclusion that emerges from their research is the need for more scientific research relating to the utilization of analytics in HR and its impact on the organization (Marler & Boudreau, 2017). In a review of 60 articles on HR Analytics, Netten (2019) findings concluded a lack of limited scientific evidence on data analytics usage and adoption of analytics by the HRD professionals.

The following are few examples to demonstrate this research emphasis placed on the benefits of data analytics for the organization. In Brock (2017) study, we are provided with examples of organizations' benefiting from the use data analytics in the training evaluation process by obtaining results in Level 3 (behavior/job performance) and Level 4 (results/impact). This study places more of an emphasis on analytics technologies and software used by Stanford University Medical Center and a South Texas healthcare system to achieve these results (Brock, 2017). However, the study failed to give insights into how the HRD professionals utilized the data or perform their analysis to achieving Level 3 performance and Level 4 organizational results.

Another example is a case study by Bhargave (2020) in which the author highlights how the organization leveraged HR analytics to improve HR operations and organizational goals. In this study the emphasis was placed on the analytics technology system on how it captured employee attrition results and on the psychometric tool for capturing the employee perceptions. To the authors credit the study did provide a brief statement on the analytical team and their utilization of the analytical tools. Bhargave (2020, p. 41) states "

> as a result of the analytical tool, the analytics team built an algorithm that included sources like recruitment data, tenure, performance, role, promotion history, salary, location, and job role; as well as enabling them to identify the triggers to predict who might quit.

This is the first study I have come across that gives a glimpse into the HRD professionals' utilization of the analytics tools to perform their analysis. Nair (2018) states that a more focused and systematic approach of HDR professionals to the adoption, use, and effectiveness of data analytics needs to evolve in order to offer a research-based information to guide.

2.10 Practice Gap: Implementation

Researchers have suggested that the HRD professionals lack of analytical skills may be reasons for the limited research on data analytics usage. Some researchers agree that analytics could serve as a vital component in the HRD function but some of the lagging research in analytics utilization may be due to the skills sets of those professionals (Angrave, 2016; Marler, 2017) states the one of the key reasons for this delay in the application of data analytics is the lack of HDR professionals' analytical skills. Kryscynski et al., (2017) concludes the lack of research-based practices in data analytics seen in research may stem from HRD practitioners lack of analytic and quantitative skills. Nair (2018) implies that HR administrative skills are essential to perform analysis and to gain access to cross functional data is required for successful implementation data analytics. However, Hangal and Kumar (2018) claim that technology know-how leads to learning how to implement analytics and not the HDR professional administrative skills. In either case, HRD professionals must move forward in developing the skills and knowledge of analytics to remain key personnel in linking HR impact on employee performance to business outcomes (Lawler et al., 2004; Waddill, 2018).

Additionally, some researchers believe the lack of organizational resources and support maybe another contributing factor to the development of HDR professionals' skills and knowledge. Kapoor and Yaggeta (2014), state that "organizations need to provide the required resources, time, training, and support for developing HR professionals lack in skills and techniques to perform complex statistical analysis for taking full advantage of HR analytics" (p.54). Zielinkski (2019) states that data-analytics competency in the HR staff is a challenge; many organizations are forced to fill this void by training existing staff or borrow experts from other functional areas. The lack of organizational support is new obstacle for organizations as they try to navigate how to invest resources of money and time for the HRD professionals' efforts in data analytics (Hagal & Kumar, 2018). Liu et al., (2020), states that the HR data analysis process is still an open research question, a new area for organizations, and an ongoing challenge of establishing experienced teams with analytics skills to conduct data analysis process. Due to these challenges existing research has focused on the benefits of data analytics for the organization and less on the HRD professional usage or implementation practices. Regardless of these reasons for the lack of limited research on data analytics usage, there are continuous efforts for organizations pursuing the adoption analytics in the HR functions.

Identifying those organizations who have moved forwarded with the implementation of analytics in the HR functions, understanding the factors which have led organizations to apply analytics, as well as identifying how HRD professionals have acquired the knowledge and skills in using analytics, and how they are applying analytics in these HR functions are all the reasons for presenting research that demonstrates scientific evidence on data analytics usage. Research that highlights these areas will only add to the knowledge around HR analytics and its application by those practitioners. This research seeks to provide research-based evidence on HRD professional usage or implementation practices for applying data analytics in the training evaluation process.

2.11 Theoretical Framework

To assist in understanding the HRD professionals use of data analytics in the training evaluation process. The UTAUT serves as a baseline to understand the factors that directly influence the behavioral intention of the participants (HRD professionals) to use the data analysis technology. Additionally, the Sociomateriality theory offers and understanding towards the human agency in the use of the technology focusing attention on what people do with a particular technology in their ongoing work activity/practices.

2.12 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) theory was developed by Venkatesh, Morris, Davis, and Davis in an effort to expound on the Technology Acceptance Model (TAM) (Venkatesh, 2003). UTAUT was developed as an alternative to eight theories and models that include Innovation Diffusion Theory (IDT), Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Combined TAM and TPB (C-TAM-TPB), Social Cognitive Theory (SCT), Model of PC Utilisation (MPCU) and Motivational Model (MM) (Venkatesh et al. 2003). Venkatesh et al., (2003) identified and analyzed eight models that were closely related to the Technology Acceptance Model (TAM) and integrated them into a single model called the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). UTAUT provided an in-depth explanation about how the two beliefs perceived usefulness of technology and perceived ease of technology

use are formed or how they can be managed to alter user behaviors (Venkatesh, 2003; Yousafzai et al., 2007). The UTAUT can be viewed as a unified model for the investigation of the acceptance and use of technology. It is a well-established theory which has been tested in many different contexts (Zuiderwiik, 2015). Over the years, the UTAUT has served as a base-line theoretical lens by researchers conducting empirical studies on the use of technology, user intention and behavior in reference to a range of technologies such as the internet, web sites, Hospital Information Systems, Tax Payment Systems and Mobile Technologies (Williams, 2015).

According to Venkatesh et al., (2003) UTAUT model consists of four main constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions; Performance expectancy is the degree to which an individual believes that using the system will help him or her to attain gains in job performance; effort expectancy is related to the degree of ease associated with the use of a technology; social influence is the degree to which an individual perceives how important others believe he or she should use the new system; and the facilitating conditions is the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. The UTAUT model also consists of four variables for providing additional insights for the model usage. To further enhance the UTAUT model four variables or contingencies; gender, age, experience, and voluntariness, were added which could provide an in-dept understanding of the main constructs on the intention to use a technology (Venkatesh et al., 2003). Much of the UTAUT concepts specifically the performance expectancy has roots in Victor Vroom 1964 Expectancy Theory of Motivation (ETM). However, the motivation of individual performance, personal goals, and sought rewards highlighted in ETM were not the contributing factors for understanding participants behaviors for using information technology.

Koh et al., (2010) states that UTAUT informs science on the user behaviors intentions for the use of a software applications. The following are some examples on how researchers have utilized the UTAUT framework to understand individuals use of tools or technology. Liu et al. (2015) applied the UTAUT in their study to examine the factors that contributed to behavior and actual use of new technologies for rehabilitation by healthcare therapists. The study utilized the instrument of survey questionnaire asking the therapists a range of questions relating to demographics, their current use of the new technologies, their expected performance around the

use of the technology, their behavior intentions for using the technology, and the social influences for using the new technologies. They applied descriptive statistics to summarize the demographics data and used Chi-square statistics to determine whether survey responses for performance expectancy, efforts expectancy, social influence, facility conditions, behavioral intention to use, and current use of new technologies were independent of gender, therapist discipline, therapist employment status, and therapist education level achieved. Liu et al. (2015) results from this study showed (1) the therapist all agreed that their work would be enhanced with increased patient outcomes as it relates to construct performance expectancy; (2) the therapist were neutral on the perception that the new technologies was not complicated and easy to use related to the construct effort expectancy; (3) the therapist were neutral on the fact the use of the new technologies had no contributing influences from colleagues related to the social influence construct; (4) the therapists agreed that the hospital environment, technical infrastructure, and internal support contribute to the use of the technology as this is related to the facilitating conditions; and finally (5) there was a strong trend in behavioral intentions to use technologies at the hospital. The application of the UTAUT in this study provided evidence that highlighted the factors that influenced the therapists to use the new technologies and the actual behaviors that influenced the continued use of the technologies.

Another example of the researchers applying the UTAUT framework was captured in the study seeking to understand the library's behaviors around the use of bibliographic management software tools. The qualitative instrument of observations and interviews was utilized with a sample size of 10 participants to uncover patterns in the participants behaviors and use of the tools (Rempel & Mellinger, 2015). The participants were asked questions to gain insight into the factors that influenced their continue use and adoption of the tools. The researchers sought to answer some of the following research questions: do workshop participants continue to use the tool after the workshop? and what makes workshop participants more or less likely to continue using the tool (Rempel & Mellinger, 2015). The findings concluded that (a) the social influences were steered by the supervisors' prompts to use the tool; (b) also that the facilitating conditions of resources and training support had a small impact on the participants adoption and continued use of the tools; and finally (c) that the performance expectancy showed a major impact on the participants usage behavior (Rempel & Mellinger, 2015). Both studies demonstrate how the UTAUT model can serve as the guiding framework for understanding participants use of

technology and for gaining insights on the factors that influence participants behaviors towards the use of the technology.

In the context of my research, the Performance expectancy will highlight those factors relating to individual performance and organizational goals that may have contribute to the use the technology; Effort expectancy will describe the degree of ease associated with the use of the technology; the Social influence will describe how any individual or groups may have influenced the technology usage; and the Facilitating conditions will describe how organizational support or resources around the technology may have contributed to participants use of the technology. The key idea of the UTAUT is that a number of factors lead to the behavioral intention to use technology (Sykes et al., 2009). In the UTAUT model these four constructs directly influence the behavioral intention to use the new technology. I employed the UTAUT as the theoretical foundation to explain the use of data analytics by the HRD professionals in the evaluation process.

2.13 User Behavior Link to System Usage

To understand how one uses technology we must interpret the connection between the user and the system. This interpersonal connection between the user and technology can offer sound interpretations for its usage. In understanding this connection, researchers have identified that technology usage is dependent on understanding the user's behavior (Wu & Du 2012). The key idea of the UTAUT is that a number of factors lead the individual/group to the behavioral intentions to use a system or technology (Sykes, Venkatesh, & Gosain, 2009). Therefore, this intention shows significantly correlated to technology usage, it is also a major determinant of user behavior, and is a significant prediction of the user's actions (Jackson & 1997). Behavioral intention is defined here as an individual's intention, plan, and current use of a technology thus serving as the best predictor of human behavior (Lee & Rao, 2009).

2.14 Sociomateriality Theory

The other theoretical framework guiding this research is Sociomateriality theory. Sociomateriality theory highlights the importance of the interconnectedness of human practices and innovative processes (Orlikowski, 2007). The key tenet of the theory is that human and

innovative processes are interlinked thus offering a new perspective in understanding the use of innovation in the workplace (Orlikowski, 2007). The selection of the Sociomateriality theory as a framework for this study was appropriate because the interplay between the application data analytics and the behaviors of HRD professionals can provide insights into the integration of data analytics in the workplace. Orlikowski (2000) states:

> When people use a technology, they draw on the properties comprising the technological artifact; they draw on their skills, power, knowledge, assumptions, and expectations about the technology and its use; they draw on their knowledge of and experiences within the organization contexts in which they work, and the social and cultural conventions associated with participating in such contexts; people's use of technology becomes structured by these experiences, knowledge, meanings, habits, norms, and the technological artifacts at hand. Such structuring enacts a specific set of rules and resources in practice that then serves to structure future use as people continue to interact with the technology in their recurrent practices. As people enact modified technologies-in-practice they also change the facilities, norms, and interpretive schemes used in their use of the technology. (pp.410-412)

Taking from human-centered perspective, this theory aligns with the social constructionism, arguing that people determine the meaning of their reality or world. Sociomateriality shows, "how practices are enacted, and in doing so, they serve to construct the phenomena they address" (Jones, 2014, pp.92). In this case the users of the technology are determining the meaning their social construction by understanding the use of technology.

In the research of Slade (2012), the Sociomateriality theoretical framework was utilized to understand the learning of rural police officers by examining the relationship through their work practices with the community, geography, and technology. Sociomateriality consists of two main components: social practice and materiality (Orlikowski, 2007). In this study the work practices of the officers are the social component; and the material component is the community, technology, and weather. This qualitative study consisted of 34 participants in with the researcher conducted individual and focus group interviews. The aim of the research was to provide a practical perspective to understanding the learning of these frontline workers by answering the following research questions; what demands are encountered by the police service in different rural contexts; and what approaches to policing have been developed (Slade, 2012).

Through the use of thematic analysis, the researcher was able to identify key themes. Those themes centered around the participants training which included a lack of specific curriculum on rural policing, a deficient national training at the Police College, a lack adequate formal training, structured on-the-job training, and additionally there were technology issues and weather conditions that impacted their professional development (Slade, 2012). The findings from this research concluded that the professional practices were connected within the social and material relationship. Orlikowski (2007) states that "the social and the material are considered to be inextricably related — there is no social that is not also material, and no material that is not also social" (p. 1437). This research demonstrated how that interaction with the materials contributed to those social practices of the officers.

In the context of my research the social practices or in-practice work activities by the HRD professionals will describe their interaction/usage with the materials, the data analytics technology. These in-practice activities will determine if any structured rules and resources are enacted to frame their ongoing actions. An example of such rules are the establishment of workflow or processes, procedures, collaboration, and best practices. Using the Sociomateriality construct offers a means of providing a richer perspective in understanding the HRD professionals' in-practice use of the data analytics technology to evaluate the training initiative. This framework allows for current and future research to move beyond showcasing the benefits of data analytics technologies, and into presenting evidence based HRD practitioner usage practices.

2.15 Conclusion

This chapter provided an explanation on how the ISD model has developed in the training evaluation process and a historical context of the evaluation models that have been utilized by HRD professionals. This chapter reviewed literature as it relates to the aim of the research, which entails the investigation HRD professionals utilize data analytics in the training evaluation process. Additionally, this chapter provided insight into existing research which focuses on the organizations' benefits provided by data analytics technology. More importantly, this chapter demonstrated the need for research that outlines the practical application of analytics by the HRD professionals.

CHAPTER 3 FRAMEWORK AND METHODOLOGY

This chapter outlines and explains the methodology used in this investigation which includes the research design, setting, sample, participants, research instrument, reflexivity, trustworthiness of the research, data collection and analyze process.

3.1 Research Design

This study utilized a qualitative descriptive design to investigate the phenomenon of lived experiences on how HRD professionals are utilizing data analytics in the training evaluation process and explore the research questions of who, what, where, how, and participant experiences. Specifically, the Interpretivist paradigm approach will be utilized as a foundational guideline of how to design, implement, and analyze this research study. The qualitative descriptive methodology examines a phenomenon in its naturalistic environment and gives the researcher the opportunity to explore the participants experiences and factors related to this event through its approach (Kim et al., 2016). This examination would allow the researcher to make meaning of research questions guiding this study based on the participant's viewpoint. Further, this approach allows the researcher to prompt participants and gleam relevant information as for the purpose of this study (Creswell, 2014).

According to Merriam (2009), in a qualitative research study, the researcher is interested in three things: (a) how people interpret their experiences; (b) how they construct their worlds; and (c) what meaning they attribute to their experiences (p. 23). The use of a qualitative descriptive method allowed for an enriched participant's experiences, familiarities, and perceptions (Neuman, 2003). In a descriptive qualitative study, the researcher has an opportunity to learn more about a situation that requires further understanding. According to Creswell (2013), researchers who utilize descriptive qualitative design methods seek to discover the actions, events, beliefs, and processes that occur during the experience being studied. Consequently, a descriptive qualitative research methodology was selected because the study was designed to understand the actions of the HRD professionals in their use of data analytics in the training evaluation process.

3.2 Justification of my Research Methodology using Qualitative Descriptive

The use of a qualitative design was suited for the study for the purpose of describing the phenomenon being studied and to answer the research questions of who, what, where, how, and participant experience. This qualitative methodology afforded the researcher the opportunity to capture the responses of the participants that were central to describing this phenomenon. The qualitative methodology with a descriptive research study allowed the researcher to formulate the interview questions that would provide an understanding to those participant experiences. This provides the researcher with thick descriptive data about participants thoughts and influences that lead them to use data analysis and its practical use in the training evaluation process.

3.3 Research Questions

Q1: What factors influenced HR professionals to use human resource analytics in the training evaluation Process?

Q2: How do HR professionals utilize human resource analytics in the training evaluation process?

3.4 Setting/Context

The organization was a Midwest regional hospital whose Organizational Learning & Development Department (OL&D) is responsible for the entire organization's training. Participants in this department comprised of the following: The training director, program manager, the curriculum manager, instructional designers, and HR training analysis. The OL&D department implemented a pilot training initiative for frontline leaders and mid-level managers. This Regional Hospital developed this training initiative to improve on the training of Supervisors and Managers throughout the organization. Their hopes were to centralize the training on how these organizational leaders were obtaining the tools (knowledge & skills) for becoming better leaders. This training consists of a single one-hour eLearning module titled, Intro to Leading and Managing. The goals were to establish an ongoing training program for those promoted leaders, and for leaders hired directly into the company. The OL&D department plans are to scale this pilot training initiative into a national program across the different regions. They began using an innovative analytic tool, Metrics That Matter (MTM), for evaluating this

training initiative. Metrics that Matter (MTM) evaluates training by providing benchmarks, surveys, reports, and predictive forecasting. MTM provides HR professionals with the capacity and tools to generate and track the organizations key performance indicators (KPI), generate employee surveys, and pull all of the organization's internal information from the LMS and HRIS systems into data for making informed business decisions. To evaluate program effectiveness, the tool also tracks the following metrics: perceived value, overall learning, business results, job impact, and net promoter score.

3.5 Sample

A typical sample size for a qualitative descriptive study maybe as few as three to five persons and ranging up to about 20 participants (Magilvy et al, 2009). This research study used purposeful sampling for the identification and selection of information for the most effective use (Patton, 2002). "Participant selection and coverage were guided by the purpose of the study and research question, with attention to the selection of '"cases"' most likely to provide in-depth coverage, knowledge and insight into the phenomenon under investigation (Jones & et al., 2014, p.96)." Participants originated from the hospital's personnel in the Midwest Regional OL&D department. These individuals were especially knowledgeable about these lived experiences on utilizing data analytics in the training evaluation process and provided valuable expertise on and insights into this inquiry. The purposeful sampling strategy applied in this study was expert sampling. Expert sampling is particularly useful where there is a lack of empirical evidence in a topic and this strategy may stand alone as the single purposeful sampling strategy (Patton, 2014). For the length of this training initiative this group of participants were identified as the training experts. They were responsible for the development of this training initiative, establishing the evaluation criteria, conducting the analysis of evaluation data, developing the evaluation reports, and determining the future direction of the evaluation process from this initiative. Their knowledge, experience, and expertise were central to this inquiry.

3.6 Participants

The selection of the participants was determined by their involvement in the training Pilot initiative. These participants utilized or interacted with the MTM tool in different facets in the

process of evaluating this training initiative. The OL&D department personnel include: The vice president, director, program manager, trainer/instructional designer, and HR analysist. An email invitation was sent out to these potential participants outlining the purpose of study, the research institution, the usefulness of the findings for the study, and the contact information of the PI on the research study.

The purposive sampling technique used to recruit participants in this study met three or more of the following criteria:

- Participated in Organization Learning & Development Department
- Participated in development and implementation of the Pilot training initiative
- Utilized the analytics innovation in the Pilot Training evaluation process
- Was a key stakeholder in the adoption of the analytics innovation in the organization

"The identification of this predetermined sampling criteria was central to the participant selection thus arriving at the characteristics, qualities, experiences, and demographics that were directly linked to the purpose of the study" (Jones & et al., 2014, p.114)." **Table 3** provides an overview of the background of participants.

Table 3. Participant Overview

Organization Development and Learning (OD&L)	
# of Participants	6
Job Titles	Director of OD &L, Program Manager, Analytics Specialist, Senior Instructional Designer, Project Coordinator, Training Coordinator
Age of Range	30-55
Gender	3Male / 3 Female
Highest Degree	6 Master's Degree M.A. in Human Resources Development M.S. in Industrial Organizational Psychology M.S. in Human Performance Technology M.S. in Organizational Development M.S. in Organizational Performance Workplace Development 1 PhD candidate Doctorate in Learning Designing & Technology 1 PhD Doctorate in Organizational Leadership
Years of Experience	5 to 27 in organizational training

3.7 Research Instrument

Researchers who conduct descriptive qualitative research can gain an understanding of the problem through in-depth interviews (Merriam & Tisdell, 2016). The in-depth interviews were conducted with the participants in one of two ways either face-to-face or via conference call. Semi-structured interview protocols and semi-structured interviews were conducted with the consent of the interviewees (see Appendix A – Consent to Interview). The interview protocols were designed to extract the essence of the participants lived experience as related to the phenomena under investigation (Patton, 2015). The semi-structured interview sought to obtain descriptions of the life world of the interviewee with respect to interpreting the meaning of the

describe phenomena (Kvale & Brinkmann, 2008). These semi-structured interview questions were used to gain participants insight for a more-in-depth response (see Appendix B – Interview Protocols). Additionally, this study conducted one focus group interviews with three of the participants. The focus group interviews were used to obtain a broad rand of information about the event. The researcher conducted the focus group interview with three members of the OL &D department which included the Program Manager, Trainer/Instructional Designer, and HR Analysist. These individuals interacted with the MTM tool on daily basis and worked collaboratively throughout the evaluation process to ensure the tool provided the training effectiveness results. "The purpose for the focus group interview is to explore in-depth attitudes, perceptions, feelings, and ideas about this phenomenon in question" (Dilshad & Latif, 2013, p. 192). All the interviews in this study were audio-recorded. They were transcribed in their entirety and the interviewees received a verbatim account of the interview. The transcripts were prepared in a standardized manner and support manually assisted coding (McLellan et al., 2003).

3.8 Data Analysis

An emergent thematic analysis using an open coding approach was used to analyze interview transcripts. "In the thematic content analysis, the themes are extracted from the text of the participants' response, resulting in the themes emerging naturally from the data and can be linked to develop a dominant structure (Miles & Huberman, 1994, pp. 55-57). According to Braun and Clarke (2006), the usage of the thematic analysis method allowed the researcher to identify, analyze, and report patterns or themes within the data. The analysis examined the data sources to determine recurring themes. I applied the following thematic analysis steps as described by Braun and Clarke (2006): (a) Familiarize myself with the data, (b) Generate initial codes across the entire data set, (c) Search for themes, (d) Review the themes, (e) Define and name the themes, and (f) Produce your findings or report. In this study data analysis began with rereading the transcribed data over several times to become familiar with the data; the next step was formulating codes from the entire data set and searching these codes to determine a relational theme for certain codes by using an inductive approach. The inductive thematic analysis is linking the themes to the data or codes without trying to fit them into a preexisting coding frame or into the interview questions given to the participants (Patton, 2002). The researcher proceeded to assemble those specific codes into basic level one descriptive themes. It

is at this point that the researcher started to identify any underlying ideas or concepts and moved from the descriptive to interruptive analysis of identifying patterns. This involved dividing the themes into organizing themes or group themes. The researcher continued to review, define, name these group themes, and determine if these themes told a story or represents a meaning from the study. A short summary of the categories was written and assist the researcher identify underlying concepts. Finally, the researcher produced the report which included a selection of compelling extracts relating back to the research questions, literature review, and theoretical framework.

3.9 Reflexivity

Reflexivity is the ability to reflect on one's behavior and motives, putting aside personal feelings and preconceptions so that the true experience of the respondents is reflected in the analysis and reporting of the research (Ahern, 1999). The goal throughout this research study was to set aside my preconceptions in order for the phenomenon under investigation to have no prior biases or beliefs interfering with the study. Periodical journaling throughout the data collection and analysis allowed me to reflect on my perspective as it related to phenomenon under investigation. These ongoing reflections allowed the researcher to remove any bias or newly form judgements relating to the study. Additionally, the researcher was able to reflect on his past experiences while the study was unfolding. See Appendix C and D – Researchers Reflexive Journal entries.

Prior to conducting this study, the researcher has worked in corporate training environments for 14 years in the capacity of a trainer, instructional designer, and eLearning developer. In those years neither of researcher's former employers/organization had implemented the use of data analytics for evaluating the training effectiveness. The researcher had no prior experience working with data analytics and positioned himself in this research as an examiner or investigator to understand this phenomenon. There were no prior beliefs or social-cultural backgrounds that pose any concerns in this research process. Qualitative research seeks to provide an understanding of a problem through the experiences of individuals, and the particular details of their lived experiences (Bourke, 2014).

3.10 Trustworthiness

Qualitative research has four criteria of trustworthiness credibility, transferability, confirmability, and dependability (Guba & Lincoln, 1994) **Credibility** is the confidence in the 'truth' of the finding; **Transferability** is showing that the findings have applicability in other contexts; **Confirmability** is a degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest; **Dependability** is showing that the findings are consistent and could be repeated.

In addition to purposive sampling and bracketing, the researcher implemented several strategies to ensure the accuracy and trustworthiness of the data process, and to allow for quality findings in the research using Lincoln and Guba's (1985) four evaluative criteria for qualitative studies. See **Table 4** on the strategies the researcher employed in the research to ensure trustworthiness in this study.

Table 4. Criteria and Strategies for Trustworthiness

Criteria	Strategies Incorporated
Credibility	● Techniques during the study - member checking.
Transferability	● Purposive sampling ● Exhaustive description (i.e., thick description) of the phenomenon
Dependability	● Interview protocols based in the literature, planned, developed, and revised. ● Independent coding of interviews
Confirmability	● Collection and documentation of audio recordings from participant interviews. ● Provide any personal experience relating to this topic to eliminate any potential bias.

3.11 Conclusion

The foundational guideline for the research design was developed through the Interpretivist paradigm and qualitative descriptive methodology. This paradigm allowed the researcher to formulate a conclusion based on the participant's viewpoint. The UTAUT and Sociomateriality provided a theoretical framework for understanding phenomenon being investigated. Additionally, the emergent thematic analysis provided a process for the data analysis and its interpretation in this study.

CHAPTER 4 RESULTS

This chapter presents the data and results of analysis. The chapter provides a description of the methodological process applied to the data analysis. The chapter additionally provides the themes revealed from the data and the thematic analysis as it relates to the constructs of UTUAT and Sociomateriality theoretic frameworks. More importantly, this chapter presents the findings that address the two research questions framed in the study. Finally, the chapter concludes with a summary.

4.1 Data Analysis Process

The following section describes the methodological process applied to the data analysis. The researcher used semi-structured interviews to collect data from six participants. The individual interview questions consisted of three domains: Background, Factor/Influences to use data analytics, and the Practical usage of data analytics in the training evaluation process (see appendix B for the interview protocols). The focus group interview questions consisted of four domains: Technology, Collaboration, Training Effectiveness, and Future Plans. The individual interviews consisted of a total 33 questions and the focus group interviews consisted of 14 questions. The questions were designed to collect information to answer the study's two research questions:

(RQ1) What factors influenced HR professionals to use human resource analytics in the training evaluation process? and

(RQ2) How do HR professionals utilize human resource analytics in the training evaluation process?

A total of 440 minutes of the collected data from the interviews were transcribed to a Microsoft Word document and sent back to the participants to review and make changes as needed. Lincoln and Guba (1985) described this process of member check as a way of assessing the validity of a qualitative study by providing the individuals the information to determine if the research has accurately reported their stories.

Coding was applied on transcriptions of the participants. The researcher applied an inductive coding approach by allowing the research findings to emerge from the data, without

the restraints of fitting the data in any preexisting coding frame (Patton, 2002; Thomas, 2006). The researcher reviewed the transcripts multiple times to identify commonly repeated phrases or words. Additionally, the researcher used MS word processing by inserting a coding column to the right of the transcribed materials in the document, highlighted each commonly used phrases or words, and assigned a code line by line (see Appendix E – Example of the Coding Process). A total of 52 codes were identified in the data (see Appendix F – Coding Book). According to Yin (2011), researchers carefully assign code names to provide context or meaning and to help during reassembly phase. After the coding frame was determine the researcher proceeded to assembling codes into descriptive themes. These themes were the initial attempt to group the themes into categories. **Table 5** outlines the grouping of these 52 codes into the descriptive themes.

Table 3. Level descriptive themes

Code and Descriptors	**Level Descriptive Themes**
BA – Bachelor's Degree MA – Master's Degree DOC – Doctorate degree PJE – Prior job experience RM – Reporting Manager YOEWA – Years of experience with analytics YOTE – Years of training experience	• Educational background • Past training experience • Experience with learning analytics
BATOA – Build a team of advocates ETUT – Eager to use tool GOOB – Getting others in organization onboard MS – Mindset PFUA – Pioneer for using analytics RAE – Resident Analytics Expert RFTS – Ready for the shift	• Adoption • Training department eager to use new tool and obtain data • Training department having a desire to achieve better evaluations • An internal influencer to utilize the tool • Need for residence expert with analytics

Code and Descriptors	**Level Descriptive Themes**
ERY – Eliminate Reluctancy ORAS – Organization established resources and support RY – Reluctancy RYNR – Reluctancy due to lack of resources RS – Resources and Support	• Overcome reluctancy and push back from others • Support within the organization
DAEP – Develop an Evaluation Plan NRFCEP – Not responsible for creating the evaluation process POC – Proof of Concept RR – Received the reports RTD – Reviewed the data STD – Shared the Data TDISS – Turning the data into spreadsheets	• Form an evaluation plan • Tasked with establishing a proof of concept through the pilot • Receiving and distributing reports within the organization
BE – Backend Expert COTFE – Collaboration on the front end EXE – Executor of the tool IIOT – Internal influencer of the tool ISOT – Initial Scaling of tool RAC – Role as a customer RACFC – Role as a champion for the cause RAS – Role as a salesman RATSC – Role as a tool scalable coach TWCWT – Those who closely worked with the toolmaker	• New job roles in the utilization of the analytics tool

Code and Descriptors	**Level Descriptive Themes**
• The data provides standardization in the evaluation process across the organization • The data identified changes in the training program content • The data offers answers to questions the team couldn't obtain in the previous evaluation process • Data provide a deeper level of evaluations with measuring Levels 3, 4 & 5	DHCS – Data helped create standardization DHCTC – Data helped change the context DPA – Data Provided Answers DPCICN– Data pinpointed changes in the context PA – Predictive Analytics SA – Standardization SP – Scalable Process TBS – The tool brought structure
• The utilization of the data offered more collaboration across the training markets within the organization • Transparency offered collaboration	DSRS – Data Shows ranking score COTFE – Collaboration on the front end TASD – Transparent and sharing the data RBC – Ranking brought about collaboration
• The former evaluation process was limited	PPWL – Previous Process was limiting UESP – Unstructured survey process

The above **Table 5** also demonstrated the next steps in the analysis process by grouping these descriptive themes into similar categories. For example, educational background, past training experience, and experience with learning analytics all relates to the participants educational and experience in the industry. Another example of the grouping of the themes is the organization initial plans to use the tool, the eagerness and desire of the department to use the new tool and achieve better evaluations, and the establishment of a resident expert with analytics. Each of these descriptive themes relates to the organization internal adoption of the tool. **Table 6** list the Categories that were derived from the grouping these initial themes.

Table 6. Derive Categories from similar basic level one themes.

Category 1: Educational background and Experience in the field of training.
Category 2: Adoption of the tool
Category 3: Overcome internal reluctancy and gain support within the organization
Category 4: Develop an evaluation plan using the new tool
Category 5: Changing job roles of those involved in the utilization of the tool
Category 6: Benefits of using the new tool
Category 7: Former evaluation process was unstructured
Category 8: Improved Collaboration across the organization

To gain a deeper meaning of these descriptive themes, a short summary of the categories was written along with identifying excerpts or quotes that would substantiate these extracted themes. This step taken to move beyond grouping the codes into categories. The short summaries assisted in gaining more understanding of how the code descriptions related to the categories.

4.2 Category 1 – Educational background and Experience in the field of training.

The participant's educational background ranged from the level of a Master's degree to a Doctorate degrees in Organizational Development, Instructional Design, Organizational Psychology, and Learning and Development. Their educational background demonstrated each participant's personal development focus in training. The educational background aligns with each of the participant's careers in the field of training. The years working in training ranged from 7 to 27 years. The education and careers in training demonstrate their mastery and expertise in the field of HRD.

4.3 Category 2 – Adoption of the tool

Each participant had a desire to adopt this tool. Their years of experience in HRD played a significant role in establishing the mindset of accomplishing the best possible approach to determining the training effectiveness. Each desired to achieve a better evaluations process and

was eager to utilize this new tool to achieve this goal. The past evaluation process was unable to render the data they needed to accomplish this goal.

A key to the adoption of the tool in the organization was having a person who was a resident expert with analytics. This person would be the internal influencer to utilize the tool. This influencer helped with gaining acceptance with the executives which was key to the organization adoption from the top down.

4.4 Category 3 – Overcome internal reluctancy and gain support within the organization

Adoption of the new evaluation process with the analytics tool was not a smooth ride with those training departments across the organization. The implementors of the tool realized that steps were needed to overcome the internal reluctancy and gain more support within the organization. Throughout the process the implementors established a line of communication with teams across the organization to reduce those fears of utilizing the tool.

4.5 Category 4 – Develop an evaluation plan using the new tool

The organization could not depend on the previous evaluation plans the organization utilized in the former evaluation process. The use of the new tool required a different evaluation plan. Those implementors' needed to develop this evaluation plan that would utilize the data from the tool. The evaluation plan involved developing end of training questions for the learners as well as post follow-up questions, receiving the data reports, transcribing and formatting the data, and sharing the data across the organization.

4.6 Category 5 – Changing job roles of those involved in the utilization of the tool

Those individuals involved in executing of this Pilot training program using this tool discussed changing job roles. They identified their job functions expanding throughout the process. They discussed a role of having the responsibility of setting up the tool to meet their needs in the training, as well as stepping into a customer role when the software vendor. Some additional roles were collaborating with the vendor to establish the front-end development, becoming a backend expert with the tool, and executing the functions of the tool throughout the evaluation process.

4.7 Category 6 – Benefits of using the new tool

The utilization of the tool brought great benefits for which the implementors' had sought after in their former evaluation process. The benefits included a deeper level of evaluations by achieving Kirkpatrick's Levels 3 through 5, by assisting in identified areas of improvement with the content, allowing for standardization of evaluations across the organization, and helping provide better predictive analysis for future training.

4.8 Category 7 – Former evaluation process was unstructured

Throughout the new evaluation process the implementors were able to reflect and identify how the previous evaluation process compared to this improved process. A growing sentiment was how the previous process was unstructured and how each training market developed their own processes.

4.9 Category 8 – Improved Collaboration across the organization

Another benefit the tool provided the implementors was improved collaboration across the organization. The tool required these implementors' to meet regularly with the various training markets within the organization. The communication presented transparency and opened the line for further collaboration on the utilization of the tool.

These categories were reviewed multiple times and it was at this point that the researcher started to identify underlying ideas or concepts and moved from the descriptive to interruptive analysis of identifying themes. **Table 7** list some of these underlining concepts.

Table 7. Underlining concept

• Educational background and past work experience are contributing factors that assisted in adoption of a new tool in the evaluation process.
• The current and past experiences in training offer these implementors a mindset for obtaining true evaluation
• The initial adoption of the tool relied on a resident expert on learning analytics. This individual was the internal influencer with the executives and with those implementing the tool on a day-to-day basis.
• Once the tool was identified a team was needed to determine how it would be used.
• A process was needed on how to utilize the tool. The resident expert was the driving force on determining this process.
• The organization did not need everyone in the training department interacting with the vendor.
• Training on the tool originated from the small team and spread to the rest of the training department.
• Internal resources and support from the organization were needed in the utilization of the tool.
• Reluctancy was overcome with transparency and communication across the organization.
• An evaluation plan had to be created in conjunction with using the tool functions
• This evaluation plan offered the implementors a way to develop steps for implementing the tool in the evaluation process
• The implementors saw their job roles/functions expanding in the use of the tool
• The formal evaluation process lacked structure.
• The use of the new tool provided more structure in the evaluation process.
• The new tool provided the data needed for an effective evaluation process.

The review of these concepts in the thematic analysis process brought forth the discovery of emerging themes. **Table 8** describes these emerging themes along with their corresponding themes. Additionally, excerpts were taking from these six participants to give context or an explanation to these emerging themes. Each of the excerpts corresponds to the participants' remarks and is labeled as participant P1, P2, P3, P4, P5, or P6 and give pseudonym names for this study, see **Table 9.**

Table 8. A Summary of Emerging Themes

Themes	Corresponding themes
1. Experience	Experience in HR training Educational background in Organizational Training Prior experience with using analytics Future job roles
2. Shift towards Using Analytics	Eagerness to transition The Mindset for evaluation Accomplishing true training evaluation Internal influencer for change Internal Resources and Support
3. Training Evaluation Process (Non-Analytics Approach)	Unstructured Process Lack of effective evaluation methods Limitation with process
4. Building Advocates and Users	Champion, the cause/Officer of resistance Eliminate Reluctancy/Resistance Building understanding Establishing partners and gain buy-in Being Transparent
5. Training Evaluation Process (Data Analytics Approach)	Identifies changes needed in Design & Content Brings collaboration across the organization True evaluation -Tracks Level 3, 4, and 5 The tool brings structure and standardization
6. HR Professionals Utilization of the Analytics Tool (Social Practices)	System setup Front line analyst Objective analyst of the data Tracking impact

Table 9. Participants Labels and Pseudonym names.

Participant Label	Pseudonym Names
P1	Philip
P2	Tracy
P3	Paula
P4	Charles
P5	Jackson
P6	Jane

4.10 Theme 1 - Experience

The participants experience in training development ranges from 7 to 27 years. In these years in HRD each of the participants have obtained advanced master's degrees in the area of Industrial Organizational Psychology, Human Performance Technology, Organizational Performance, Organizational Development. One of the participants has obtained a doctoral degree in Organizational Leadership and another participant is a current PhD candidate in Learning Design & Technology. This educational background from these participants focuses in on Organizational training and development. They have each worked in a number of previous roles in HR, which includes positions as a trainer, HR coordinator, instructional designer, training manager, HR analysts, program manager, director, and vice president of learning and development. These years of experience in HRD and their educational background demonstrate the expertise they brought to the organization and more importantly the understanding for evaluating training effectiveness. As HRD practitioners their perspective on the utilization of analytics in the training evaluation process was insightful in the investigation of this phenomenon.

A corresponding theme that emerged from this study was the participants' past experiences with utilizing or applying analytics in the training evaluation process. Only one participant had prior experience with utilizing analytics in the training process. Philip states,

> Prior to my current job with this company, I worked for five years for the company call Metrics That Matter, I was the general manager for their learning analytics group in

> learning analytics which was a division of the corporate board. I would say it dates back to 2002 when I became involved learning analytics prior to working at Metrics That Matter, I worked for Anthem Blue Cross and at that time we had a relationship with the company Metrics That Matter we adopted the usage and it spread across the rest of Anthem. That was kind of the start my introduction into learning analytics and leveraging the software and methodology [sic].

The other five participants gained their understanding of learning analytics through self-directed training. Those participants who utilized self-directed training sought out conferences, workshops, webinars, and literature on learning analytics. Tracy stated,

> I really just dove into understanding learning analytics, getting an understanding of all the different learning, and evaluation methodologies. I read various white papers, attended webinars, read different books, attended conferences, and joined professional organizations such as the Center for Talent Reporting, the Corporate Learning Analytics Network, and the Association for Talent Development. Once I stepped into gaining and understanding of learning analytics it lit a fire in me and I wanted to ultimately build my career around it [sic].

Jackson stated,

> I attended some webinars on learning analytics and more importantly I read the book, Measure What Matters by the author John Doerr. The book help ground me in understanding what metrics to measure in this whole evaluation process [sic].

Expanding their knowledge and understanding of analytics is key to this HRD professional development. As claimed by Netten et al., (2019), in the near future HR analytics will be an integral part of the HRD function. Jackson stated, *our roles are expanding and our leaders, stockholders, clients, and customers, are all starting to expect it*. Additionally, Tracy stated, *I say definitely our role in training is expanding, now having a good grasp of learning analytics, our roles are expanding into talent analytics. Knowing that a lot of learning analytics will feed into broader talent analytics succession planning and development plans.* These HRD professionals in this research specifically participant 2, 3, 4, and 5 were keenly aware of the changing landscape for utilizing analytics in their job functions. The participants in this group started out

using data analytics in this training pilot initiative but through the success of the pilot the organization has begun expanding its utilization of data analytics across several programs throughout the company.

4.11 Theme 2 – Shift Towards Using Analytics

An interesting discovery from this study was that the participants experience in training and development (T&D) was one of underpinnings that assisted in the organization's shift towards using analytics. Their experiences in T&D gave them the passion for conducting training evaluation and this, in turn, led to an eagerness to apply new approaches in the training evaluation process. Underlining this eagerness was the participants mindset for accomplishing the departmental goal of determining the training program effectiveness. Charles stated,

> I was eager with the selection of the analytics tool because I was going to utilize it to measure the effectiveness of the programs that my team was designing. We were ready for this shift, we didn't have a consistent evaluation tool, because we didn't have a way to empirically demonstrate the value of the training. Everybody, meaning the leaders we supported was eager to see what kind of impact the training was having on their markets. Our OL&D team was eager for this our team members had an appreciation for the evaluative component. I never brought the team together to say, we're stepping into this new realm of doing consistent evaluation. The team just got it and always understood that was a need for us. They just kind of ran with it once we started to engage with the analytics tool, MTM [sic].

There were additional themes that corresponded to this second theme – the shift towards using analytics. The corresponding themes that emerging from this main theme were (a) accomplishing true training evaluation, (b) internal influencer for change, and (c) internal resources. These corresponding themes also align with the UTAUT constructs of performance expectancy, social influence and facilitating conditions. See **Table 10** for the alignment of the corresponding themes with the UTAUT constructs.

Table 10. Corresponding themes and UTAUT construct alignment

Emerging Corresponding themes	UTAUT construct
Accomplishing true training evaluation	Performance expectancy
Internal influencer for change	Social influence
Internal resources	Facilitating conditions

4.12 Accomplishing true training evaluation – Performance expectancy

The UTAUT construct of performance expectancy captures the factors to which an individual believes that using a technology will help them or the organization to attain gains in job performance (Venkatesh et al., 2003). The organization and the HRD practitioners in this study had the performance goal of accomplishing training evaluations results that would deliver evidence for the training effectiveness. Philip stated,

> My boss, the senior VP of HR realized that we were throwing a lot of different learning opportunities at the associates across the organization, and we really had no idea whether or not if it was working. She asked, how do we know if we're getting a return on investment for all the money that we're putting into training. We need to know if this is working. In response to senior VP of HR we dove into the utilization of the analytics tool – MTM. To show proof of concept we choose to run the application of MTM through a pilot training program [sic].

Jackson offered similar reasonings for using this technology. He stated,

> This tool could help us move in the direction for high level evaluation. In this case, this would get us into level 3 and 4. We can see if employee performance and behavior actually change after the training[sic].

Charles also reiterated this performance goal for accomplishing training evaluation across the organization.

> We were accountable for creating the national solution for program evaluation. We selected the tool, and I was very supportive of the direction we were going and was focused on the delivery of the solution. I really wanted to see the data and I knew it would improve the process of delivering the materials [sic].

These above excerpts provided evidence of the organization and the participants performance goals for accomplishing effective training evaluations. These participants believed that the utilization of this analytics tools – MTM would help accomplish this goal. The degree to which they believed that would help them accomplish this goal contributed to these individuals' eagerness and wiliness to use the analytics tool in the training evaluation process.

4.13 Internal influencer for change – Social influence

The UTAUT construct of social influence described in this study is any individual or groups who may have influenced the technology usage. For this study there were no external, outside the organization, social influences that lead to the technology usage in the organization. Much of the social influences came internally from a resident analytics expert. This individual brought a wealth of knowledge relating to analytics to organization and had successful executed the utilization of analytics within a former organization. Philip stated,

> Dating back to the early 2000s, I was employed as director of development and was first introduced to the MTM as the learning analytics tool that was being applied across this large health care organization. I later moved to another company and took that methodology and applied this approach in this organization. I eventually began working as a consultant with MTM and progressed to become the organization's general manager. My background and history provided me as being the resident knowledge expert and when the VP of HR wanted those answers about training effectiveness, I step up and made the suggestions recommending this approach.

Some of the other participants confirmed this internal influencer of the tool. Tracy stated,

> We were fortunate in having a leader who had come from a previous job of leading this same initiative. This was helpful and I lean on him as a mentor throughout the process. He would send me some white papers to read and different webinars to attend. That helped and really kicked off the process [sic].

Expressing similar sentiments was Jackson. He stated,

> He was the one driving the implementation, on what the analytics provide, and how it actually gives you the reporting data. He was more or less a mentor to our OD&L team. So, he would give us a preview and show us a few things and we were asking questions [sic].

The internal influencer with the expertise in the area of analytics is probably a rare occurrence in an organization. Analytics development in organizations are still in its early stages and many HRD professionals are still gaining an understanding for analytics. For this study, the resident analytics expert played a significant role influencing others in the organization towards the implementation or adoption of analytics in the training process.

4.14 Internal resources – Facilitating conditions

The UTAUT construct of facilitating conditions describes how organizational support or resources around the technology may have contributed to participants use of the technology (Venkatesh et al., 2003). In this study, the organization was able to leverage multiple departments to assist in support of the utilization of analytics tool – MTM. Paula stated,

> In addition, to our Design Team, the organization has the Strategic Workforce Planning and Analytics Department which consist of Executive leaders, HR Business Partners, HR Advisors, HR Operations Consultants, Compensation/Benefits Dept., OL&D members, Clinical Professional Executives, Educators, and Performance Improvement Department leaders. These two groups serve as another data triangulation point when evaluating a program's effectiveness [sic].

Philip added,

> These groups were available to us to assist with more robust impact analysis of the training's ROI or impact. The organization already had these groups form within the company when we began our analytics work on the pilot program. We partnered with them for some of our higher-level analytics when looking to correlate the proxy survey results from MTM with actual business results that this group had in their data repository [sic].

Tracy concluded,

> We have a great working relationship with these groups and partner closely on projects and align processes. The Strategic Workforce Planning & Analytics team is the head analytics team for all HR and involved in the deeper analysis as it relates to the impact across the entire organization [sic].

The key idea of the UTAUT is that a number of factors leads to the behavioral intention to use technology (Sykes et al., 2009). In the UTAUT model these three constructs, performance

expectancy, social influence, facilitating conditions directly influence the behavioral intention to use the new technology. In aligning with these three constructs were the themes; Accomplishing true training evaluation, internal influencer for change, and internal resources and support.

4.15 Theme 3 – Training Evaluation Process and Theme 4 – Building Advocates and Users

Themes 3 and 4 provided insights into the organization previous training evaluation process which was the non-analytics approach. Additionally, they also revealed the internal barriers the MTM – Pilot Design team faced with building advocates for the cause across the organization. First, I will begin with looking into theme 3 which relates to the organization's previous training evaluation process. The corresponding themes that emerged in theme 3 were: an unstructured process, the lack of effective evaluation methods, and limitation with the current process. The participants stated their frustrations with the former training evaluation process in comparison to the new analytics approach. Central to those frustrations was the limitation they experienced within the former process and not being able to determine the training true effectiveness. Tracy stated,

> The former evaluation process was very fragmented and kind of ad hoc processes that was happening all over the place. We were unable to measure things like scrap learning or how much learning the employee are they actually applying to their role [sic].

Charles concurred and stated,

> We had unstructured surveys. We didn't have anything central; we didn't have any sort of singular tool or a consistent process for evaluating our learning and the effectiveness of our learning and development programs. We needed something that was more consistent and more scaled across all of our programs. The different programs across the organization had their own solutions for validating the program effectiveness. Some programs would pass out a one-page survey for the learners to complete and they would get a low response rate because people didn't want to stick around to complete a survey. Some of the qualities of the evaluation questions were being design by their local teams without any oversight or support and questions were really poor. These smile sheet survey questions some would ask questions relating the food and room temperature and only provided into insight showing rather the participants had a good time [sic].

To summarize these frustrations Jackson stated,

> Those smile sheets only showed if the learner was happy with the instruction and the facilitator, but we really didn't have any way that was valid that could validate or benchmark whether or not if the learning was effective, hitting the job market, or seeing the business results. The old process didn't provide us with those important levels of evaluation, level 3, 4, and 5 [sic].

Theme 3 -Training evaluation process reinforces the ATD (2016) study findings concluding that the current HRD professionals' evaluations methods only exist at Levels 1 and 2, and that levels 3, 4 and 5 lack widespread use by these practitioners. The former evaluation process utilized by the HRD professionals in this study were only able to achieve the Level 1 (reaction to the study), and Level 2 (acquisition of knowledge of the learner). Later in this chapter, the theme 6 – Training evaluation process (the data analytics approach) will discuss how the utilization of data analytics help assist the HRD professional in evaluating the training at higher effectiveness.

Theme 4 – Building Advocates and Users revealed the internal barriers the MTM – Pilot Design team faced with building advocates for the cause across the organization. The corresponding themes associated with this main theme are: (a) the internal influencer who champion the use of the tool as an officer of any resistance, (b) eliminating reluctancy and resistance, (c) building an understanding, and (d) establishing partners and gain buy-in. In the launch of this Pilot program there were many employees still holding fast to the old evaluation processes in the organization. Overcoming this barrier required the HRD professionals to step into a new job role for building advocates and users for this organizational shift into analytics. Paula explained the barrier the HRD professionals had to overcome,

> The reluctance we receive was around the unfamiliarity and perceived complication in using the MTM tool to extract data. So, there were a lot of socialization and training opportunities to get people familiar with the tools and to be able to use it. So, I would say the reservation were around the use of the tool and less around the opportunity to pull data [sic].

Charles gave additional insight into those barriers and how he had to eliminate the reluctancy.

> The reluctancy or hesitation centered around the time involved in this new process. I got questions asking, how long is this process going to take. I would assure them that this

> was a short process and that the data was going to be very beneficial in helping us validate the program and work to continuously improve the program. This helped to appease their concerns. We also had a lot of conversations, regular check-ins and informing them that we were moving to really creating more standardization and alignment. In many of those calls I just explained that we needed consistent national level evaluations, because it would help drive improvements in quality of the design [sic].

Philip added additional insight into overcoming those barriers.

> We offer support in using the system to build out the surveys. We started building the surveys for some of our larger programs and then began sharing. Many of them were using paper evaluations/surveys, but once we got the people comfortable with doing this automated version of evaluations, we moved forward with instituting a follow-up surveys, which also automated within the MTM system. We gain some tractions with this and they started seeing data and began to understand how things were playing out. The lessons learned was that we had to keep our HR business partners involved in the process to help them feel comfortable and to understand the importance of this methodology approach [sic].

Finally, Tracy discussed the process for establishing partners and gaining buy-in.

> We started to communicate with other departments, and this helped. We also picked a smaller team of about 10 individuals who were involved with the evaluation process. They were from all over in the organization not just with leader development but from new hire orientation, clinical work, and clinical education. We brought these team members together, got them grounded in the learning methodology, and got their input. It was really a partnership of what do you think would be most helpful. So, they weighed in on the evaluation process and we narrowed down some standardized templates before we ever introduced the tool to them and getting their buy-in upfront was a major win.

To assist in the success of this new approach the HRD professionals sought to build partners, advocates, and users throughout the organization. This partnership that sought to build an understanding of the tool eliminated the resistance or barriers that hindered the data analytics approach in the evaluation process. After overcoming these barriers, the HRD professionals were able to accomplish the overall performance expectancy set out in the implementation of the tool.

4.16 Theme 5 – Training Evaluation Process (Utilizing a data analytics approach)

As previously stated, theme two outlined the performance expectancy/performance goals set out by the HRD practitioners in this study. Furthermore, theme four revealed how these same practitioners were able to accomplish the performance goals throughout the evaluation process within the Pilot program. The utilization of data analytics in the evaluation process provided the HRD practitioners with structure and standardization in the evaluation process. It helped them identify the changes needed in the content design. It also provided collaboration across the organization, and also assisted them in accomplishing higher level evaluation of levels 3, 4, and 5. As it relates to accomplishing these higher levels of evaluation, Jackson stated,

> The utilization of analytics through the MTM tool has giving us the resource to measure how someone is going through a training program and how it will impact that person's job. We can benchmark this impact, validate, and compare this to other industries and see how we're scoring as a company. The benefit of the tool is obtaining deeper analytics and being able to match it with business results [sic].

Paula concurred with Jackson about this deeper level of evaluations and adds,

> The MTM tool has given us a lot more capabilities to be able to achieve a more robust evaluation then what we had in the past. We have been able to take one step further in our evaluations. The tool has a really great algorithm that will allow us to look at particular questions and be able to correlate the data that should tell you if there is a bigger correlation between behavior change and how they answered those survey questions. We are now able to determine if there has been an actual behavior change, if learning has happened, and if it has been sustained behavioral changes [sic].

Regarding changes to the content design and collaboration across the organization, Jane stated,

> The tools have allowed us to use the data and later meet with those leaders to discuss content design around their need's assessment. If the data shows that the learning and skills weren't met, then what we can change from a national perspective in our content design. We can now understand how we can take those metrics and really make valuable improvements to our programs. We can connect the data back to our content and truly impact the design in the training moving forward [sic].

Charles provided additional evidence into the benefits the analytics tool has given them.

> My role as always been really focusing on the content creation and getting the course designed. It was data we'd always wanted to get to help us understand what we could do to improve the quality of the content. The data has now just delivered use this opportunity to do continuous improvements on our programs. The data has been really valuable because it helps affects the design of what we need to do, and we are now able to make some changes to the design process. We now have better collaboration with the leaders in the design process. We have empirical data that points to the changes that are needed and shows if the content isn't hitting the mark. The data has affected more profoundly our collaborative partnerships with leaders [sic].
>
> The MTM data has given us the validation that we needed to move our programs to the next level. MTM has been able to provide us with some predictive analytics around learning application. The ability to focus closer on level three evaluation has been hugely advantageous for me because it gives me credibility to sit with our operational leaders to show that we're doing advance productivity. These are investments you need to make in order to improve productivity in your markets. Those leaders would have never believed this if we didn't have the MTM data to point to [sic].

Tracy discussed how the tool has provided structure and standardization,

> The MTM tool has given us the ability to structure our post event evaluations. We are able to set parameters to automatically distribute post evaluations via email, as well as automate the reporting. As soon as the evaluation closes the reports get generated. We set the timeframe for the reports weekly or monthly and who receives the reports. In the past it was a very manual process of collecting all the survey responses and building the reports. MTM completes an executive summary on a quarterly and annual basis. It completes an annual deep dive analysis for all of our programs. The tool assists you in getting to those deeper evaluation questions and further establishing standardization in the questions across the different training programs. In the past we were creating questions based on opinions and without really having data to show that this works and here's the data to prove it [sic].

The utilization of the analytics tool MTM provided these HDR professional with many capabilities they were unable to achieve using their former training evaluation process. The HRD practitioners stated that the former training evaluation process was unstructured and less

standardized, the process had many limitations, and more importantly it lacked the means of providing an effective training evaluation. In contrast, the utilization of the MTM provide them with advance capabilities they have always sought to achieve in the training evaluation process. This theme provided evidence to demonstrate how the analytics tool MTM has brought structure and standardization in the evaluation process, has assisted them in identify the changes needed in the content design, additionally had assisted them in the collaboration with leaders across the organization, and finally has given them the capabilities to accomplishing higher level evaluation of levels 3, 4, and 5.

4.17 Theme 6 – HRD professionals' utilization of the analytics tool (social practices)

Sociomateriality theory highlights the importance of the interconnectedness of human practices and innovative processes (Orlikowski, 2007). The key tenet of the theory is that human and innovative processes are interlinked thus offering a new perspective in understanding the use of innovation in the workplace (Orlikowski, 2007). The final emerging theme from this study, HRD professional's utilization of the analytics tool (social practices) gives evidence for understanding the use of tool in the workplace. The two components of Sociomateriality are social practice and materiality (Orlikowski, 2007). In this study the material is the technology or to be specific the MTM analytics tool and the activities associated with the HRD professionals using and interacting with this technology is the social practices component. See **Table 11** for the alignment of the corresponding themes with the Sociomateriality Theory components of social practice and materiality. These themes: a system setup person, tracking impact, tool administrator/executor, front line analyst, and objective analyst of the data discuss how those practitioners utilize the analytics in the training evaluation while serving in these various roles.

Table 11. Corresponding themes and Sociomateriality theory component alignment

Emerging Corresponding themes	**Sociomateriality component**
System Setup Person	Social practices
Front-line Analyst	
Objective Analyst	
Tracking Impact	

4.18 Theme: System Setup

Throughout the utilization of analytics in the training evaluation process these HRD practitioners' function in different roles. First, one of the key roles in this process is to function as system setup person. In this organization two individuals were identified as those people who solely interacted with the MTM tool system experts, assisting those experts in setting up the organizations features and communicating to the rest of the HRD professionals on tool utilization and components. Philip explained this staff members initial functions utilizing the tool.

> MTM is a SAS technology, software as a service. Using this SAS technology, we were working with the consultant team at MTM to configure it in a way that was going to work for our organization so that the software would carry the load. We spent most of our time in that first year setting up those processes and mechanisms. We were looking for the system setup to carry the heavy lifting on the actual deployment data gathering and pushing out automated reports to our downstream stakeholders [sic].

Once the initial setup was completed, the HRD practitioners needed someone to function as the tool administrator or executor. This role was another important function in the utilization of the analytics. Phlip discussed this role in the execution of the tool in the evaluation process.

> The HR coordinator was promoted in the role of the HR analyst. In the role, they establish our basic intake process which was to work with the groups in the organization to find out their training program's delivery schedule. We had it set up so that the learning coordinator would have a standard template that would take in information on who's the course owner and coordinator, where the program will be delivered, who's delivering it, how long was the program from start time, start date, end date, and all of that basic transactional information. This person would feed this information to our MTM support team, and the information would all be loaded into the system. In response, MTM would attach the best template that they felt would address that type of program course. This learning coordinator would later get back a test survey link and they would send that link out to the point of contact or course owner for that particular course. The course owner would test the link in their network to make sure it worked. More importantly to make sure the survey questions being asked were appropriate for that program course. Once the course owner gave their approval, she would give the green light to MTM team to turn the link on or setup a turn on date. All of this was the

> intake process they established to customize the timing of the delivery of the email link with surveys (post evaluation and 60–90-day follow-up evaluation). All of this setup was automated in the system when the course closed on that end date. The system would automatically send out those preselected series of reports to all the internal support in the organization [sic].

Tracy added,

> This HR analyst was our complete administrator for testing or processes in MTM. They were a point person in the organization we could reach out to directly. We could look a partnering with her to develop surveys and evaluation data [sic].

In this intake process there was another function the HRD practitioners conducted to ensure the success of the tool utilization in the evaluation process. That was the development of those survey questions; the post evaluation and follow up evaluation.

4.19 Theme: Frontline Analyst

The Theme frontline analyst was a role the HRD practitioners functioned in to ensure the development of the surveys met the needs to evaluate the training programs. These frontline analysts were the creators of the evaluation plan. Jackson stated,

> The frontline analyst would basically do the setup work on the evaluations. We would develop the structure around how we were going to evaluate. We partner with the HR analyst to develop that evaluation plan. In this meeting, the HR analyst would suggest a structure for evaluation that came from MTM. The system would suggest an array of question that maybe used in eLearning or face-to-face training. Even though these questions come from a database, we are able to select those questions and tweak or change the questions that meet our needs. This assist in being able to edit great questions rather than having to create the questions from scratch. We would take that list of questions and meet with both the curriculum manager, instructional designer and subject matter expert to discuss what they were looking to measure in this particular training module [sic].

Jane gave additional insight,

> MTM provide a draft of questions of what we could look at from the program. Then we went in from the perspective of our needs assessment of what we were trying to do and

> what we were trying to understand from the evaluation. We met with individuals to fashion the questions on what information they were providing us and to get the data to evaluation. We look at their learning objectives and reviewed some evaluation theories to glean for additional perspectives in fashioning those questions [sic].

Philip added,

> These frontline analysts were designing the survey from the front end, they were involved in the ADDIE process to understand what outcomes they were trying to achieve so that they addressed the needs in those evaluation surveys. They designed the question and then tied in the metrics in this evaluation process. A survey is no longer just for level one but it's a predictive analytics survey for all levels that provides you a multitude of information. We were asking questions on change behaviors, job impact, tying questions to both micro and macro business measures, revenue, customer service, patient experience, and employee engagement [sic].

In the design of these survey questions, these HRD practitioners had to consider the needs assessment of the SME, and the curriculum manager. As well as ensuring those needs were represented in the best questions to return the appropriate data for evaluating the training program at all levels in the evaluation process. This role has become a standard function for their utilization of the data analytics in training initiatives as many more training programs align under this new process.

4.20 Theme: Objective Analyst of the data

An Objective Analyst of the data is another role of these HRD practitioners. This role required these practitioners to objectively review the data and pass on the finds to the managers in the organization. This emerging theme involves interpreting or translating the data to those organizational leaders. Once the data was generated from the MTM tool, these practitioners assist the organization leaders in translating the data. Charles stated,

> We would pull together the national design committee, facilitated a conversation the review MTM data. We were the facilitator on what does this data mean for quality of the training program at the national level. We would address the themes we were getting from the data and what the data means for us at the national level [sic].

Paula gave some additional insight into those steps on how the HRD practitioner interpreted this data.

> After we pull down the data, we would create an excel spreadsheet and crunch some numbers to be able to show what the productivity savings were for that particular project in dollar-on-productivity savings. This spreadsheet could be anything from drafting a summary, an execute report, excel, and some sort of data integration [sic].

Tracy concluded,

> We took an intentional approach to sit down with each of the individuals receiving the data to walk through what the report was showing and how it summarized some of the data. We were trying to build data literacy and help people get comfortable looking at data. Now our OD&L team are very strong with looking at and communicating the evaluation report data [sic].

The participants previously discussed the capabilities of the MTM tool in generating an array of reports from the data. These HRD practitioners were key in the front-line design of those post event and follow-up survey questions used to generate the data. Their expertise in this area provided them with the opportunity to transition in this role of interpreting the data to those organizational leaders. As revealed in this theme, the organization leaders looked to their knowledge and expertise in assisting the organizational leaders to understand the data in the reports.

4.21 Theme: Tracking Impact

Finally, the utilization of the data in the training evaluation process equipped the HRD practitioners to fully track the impact of the training initiative at all five levels of evaluation. The final step in the ADDIE model is the evaluation process, and this step concludes after the review of the program's evaluation (Clark, 2015). However, the selection of the post event survey and follow-up surveys in the evaluation plan provided the practitioners with the additional data to determine the training programs effectiveness. The selection of these survey questions represented the potential data for evaluating the training effectiveness from levels 1 through 5 in the training evaluation process. The utilization of the analytics in the evaluation process offered an expanded function for the HRD professional to track the impact of the program. Jane stated, "We have a lot of data we're putting out for them to look at like ranking job impact or

courseware, and operations. We are providing that additional context to the reports and the metrics."

Philip added,

> We modified the MTM system and survey questions to only focus on higher level metrics. We instituted the follow-up surveys in MTM and what that did was send out a survey to determine when people started to demonstrate the use of these acquired skills, change behavior, or new knowledge. This follow-up survey was set for 60- and 90-days post training. So, evaluation questions related to behavior change, impact on the business, return on investment, and any other higher-level evaluations would go out to those program participants. A slightly modified version would also go out to their managers asking for feedback on whether or not they were seeing these behavior changes or the use of those obtained knowledge and skills [sic].

Additionally, modification in the course content stemming from the post-survey would provide the HRD practitioners the capacity to track the impact from those changes. The post event survey provided the practitioners the initial insight in learning if the content met the learner needs. If the survey data revealed that the content needed changes, they would meet with those SME and program managers to suggest those appropriate modification in the course content design for the next round of training delivery. These changes in the content design would require additional tracking to see if those modification impacted the business. Tracy stated,

> When the program managers shift their content or modified the design of their training programs in any way based on the insights from the initial post-event survey data, they were asked to communicate those results. This allowed us to partner with MTM to track the trend data over time to see whether those content changes were effective [sic].

The post event survey provided insights into levels1 and 2 evaluations whereas the follow-up surveys provided insights into levels 3, 4, and 5 evaluations. These data provided the HRD practitioners with the capabilities to track the impact of the training program on business results. The utilization of analytics in the training evaluation process expanded these HRD practitioners' analyses to reach beyond the post event and into a higher-level evaluation.

In this study, how did the HR professionals utilize the human resource analytics in the training evaluation process? These HR professionals stepped into various job roles throughout this process which were new job functions identified in the use of this tool. They utilized the

human resource analytics in the training evaluation process by functioning as a system setup person; they tracked impact of the tool; they functioned as tool administrator/executor, they became front line analyst; and they became objective analyst of the data with individuals/departments throughout organization. The use of human resource analytics in the training evaluation process was outlined in these various job roles these HR professionals assumed throughout this Pilot training program.

4.22 Summary

Overall, this chapter has discussed the factors that influenced HRD professional's utilization of analytics in the training evaluation process and the impact of utilizing analytics in the training evaluation. This chapter provided evidence for the factors that influenced the HR professionals to use analytics in the training evaluation process by relying on the theoretical lens of UTAUT. The UTAUT constructs; performance expectancy, social influence, and facilitating conditions provided the researcher the opportunity to reveal the user's intentions for using HR analytics in the training evaluation process. Additionally, this chapter provided evidence for explaining how HR professionals utilize analytics in the training evaluation. In particular, the use of the Sociomateriality theoretical framework provided insights into the integration of data analytics in the workplace. The Sociomateriality constructs of social, and material provided the means to understand the HRD professionals' in-practice use of the data analytics technology to evaluate the training initiative.

CHAPTER 5 DISCUSSION AND CONCLUSION

This chapter provides an overview of the evidence in relations to the HRD professionals use of data analytics in the training evaluation process and the factors relating the user intentions for using the technology. Secondly, this chapter offers insights into the findings and provides implications for the practice of those organizations seeking to utilize data analytics in their evaluation process. Additionally, the chapter concludes with the implications of the study, identifies area of potential research, and the conclusion.

My thesis statement for this study states, that existing literature has focused on the promotion of analytics in the organization versus the practical application of analytics by HRD professionals to determine training effectiveness. As HRD professionals expand their efforts to incorporate analytics, further research is needed to demonstrate analytics potential impacts on accurately and systematically evaluate training. This thesis statement reflects my primary focus in this research to investigate the practitioner's utilization of data analytics in the training evaluation process and their use of evaluation tools/systems for accomplishing this task. The findings provide evidence as well as answer the questions that were central to this investigation.

5.1 Research Question 1 Findings

Research question 1 investigated, What factors influenced HR professionals to use human resource analytics in the training evaluation process? The findings based on the data in the study highlights three factors that provide insights to this Research Question 1.

UTAUT has been largely successful in explaining behavioral intentions and technology use and attempts to explain the various factors that influence at a micro level the individual's intentions and subsequent use of technology in over many studies (Venkatesh et al., 2016). (1) The first factor that influenced these HR professionals stems from the individual and organization performance expectancy to accomplish training evaluation measures that determined the training effectiveness. Venkatesh et al., (2003) defines performance expectancy as the degree to which an individual believes using the system will help him or her to attain gains in job performance. A technology that fulfills its intended objectives by enabling individuals' usage will be perceived as having better performance outcomes. Performance

expectancy has been noted to be the strongest predictor of the behavioral intention (Venkatesh et al., 2003). Many studies have proven that the higher the performance expectancy, the higher the actual system usage (Zhou et al., 2010). Several studies have found this to be valid in a certain research context related to HRD professionals' behavioral intention. Those researchers have found a significant influence of performance expectancy with the use various forms of technology such as the adoption of HRIS or Human Resource Information Systems (Quaosar,2018), in usage of technology for electronic human resource management systems e-HRM (Obeidat, 2016; Harazneh & Sila, 2021), and in the utilization of e-learning in the workplace (Yoo & Han, 2013). These studies have highlighted that the HRD professional performance expectancy can influence these practitioners' intention to use new technology.

In this study, the organization's HRD professionals were the VP of HR, Director of Organizational Development, Trainers, Training Program Manager, HR Analyst, and Instructional Designers each sought a similar performance expectancy. That performance expectancy was to determine the training effectiveness. Even though this performance expectancy originated from the VP, we see in the data provided from this research that each of these participants sought a similar performance expectancy in the overall evaluation process. This study's, Theme 1 – Experience, discusses these underpinnings that provided the environment for a shift in using HR analytics in the training process. The participants, with 7 to 27 years of experience in training development established this eagerness to apply new approaches in the training evaluation process. Beyond this eagerness there were some essential factors that influenced this shift. As outlined in Theme 2 – Shift Towards Using Analytics, and its corresponding subthemes we see these factors contributing to shift toward this tool. Their goals for improved training effectiveness evaluations led this organization adoption of the MTM software and utilization of the data analytics in the evaluation process.

The utilization of the UTAUT theoretical framework provided the means for extracting these factors from the participant responses in this study. The key idea of the UTAUT is that several factors lead to the behavioral intention to use technology (Sykes et al., 2009). The UTAUT construct of performance expectancy assisted in identifying the main performance expectancy of the participants or implementors of this tool. This performance expectancy was to accomplish true training evaluation and measurements in their overall training program initiative.

(2) The second factor that contributed to influencing the HR professionals was the social influence which was driven by the internal influencer or the resident analytics expert. Venkatesh, et al. (2003) defines social influence as the degree to which an individual believes that people surrounding them are important when he or she deciding to use the new system. Dutot (2015) states Influencers are people we trust and helps in others adopt more easily the technology. Previous studies have examined that social influence has a positive and significant influence on behavioral intention to use a technology (Phichitchaisopa & Naenna, 2013). Bondarouk et al., (2017) states that 'people factor' is key to contributing to the adoption and use of technology and these individual(s) mindsets makes a difference in an organization. Bondarouk et al., (2017) assert that the 'people factor' in the organization include top management, innovative and visionary leaders. As demonstrated in my second factor, my findings confirmed Bondarouk et al., (2017) 'people factor' as an influencer to the technology adoption.

The internal influencer in my study was an individual who brought a wealth of knowledge and expertise to the organization. His leadership championed the organization's direction in the adoption of analytics and drove the internal development of its usage. The HR practitioners within this organization looked to this person's leadership and direction in the implementation of data analytics in the training evaluation process.

The UTAUT construct of social influence additionally assisted in identifying those factors that influenced these participants to use the tool. The UTAUT social influence describes any individual or groups who may have influenced the technology usage. In this study, the social influencer identified was the resident analytics expert who became the internal influencer driving the adoption and use of the tool. This internal influencer as outline in the above theme - ***Internal Influencer for change***, was an important contributor to influence these HR professionals.

Venkatesh, et al., (2003) defines facilitating conditions as the degree to which an individual believes organizational and technical infrastructure exists to support the use of the system and more importantly have a direct effect on the employee's intention to use the technology. The facilitating conditions center around the organizational structure which creates a supportive climate and provide the resources needed; this is key to contributing to the adoption and use of technology (Tornatzky & Fleischer, 1990). The last factor in my finding echoes this need for organizational resources in the utilization of a technology.

(3) The last factor that contributed to influencing the HR professionals was the facilitating conditions or internal resources which the organization had established to assist in the utilization of the analytics. The organizational support of the MTM Pilot expanded across two different teams in the organization which were the Strategic Workforce Planning team, and the Analytics teams. This support or resources help contributed to the success of the application of analytics across the entire organization.

The theoretical lens of the UTAUT construct of facilitating conditions additionally assisted in identifying those factors that influenced these participants to use the tool. The organization was able to leverage multiple departments to assist in support of the utilization of analytics tool which included the Strategic Workforce Planning and Analytics Department which served as another data triangulation point when evaluating a program's effectiveness. As seen in the subtheme - *Internal Resources* the UTAUT facilitating condition construct identified that the organization's internal support additionally contributed to the factors that led to influencing the HR professionals use of data analytics.

5.2 Research Question 2 Findings

Research Question 2 investigated: How do HR professionals utilize human resource analytics in the training evaluation process? The evidence revealed in this study highlighted four usages of the HR professionals that provide insights into this research question. The use of the theoretical framework of Sociomateriality theory describes how human practices and innovative processes are interlinked thus offering a new perspective in understanding the use of innovation in the workplace (Orlikowski, 2007). Adopting a Sociomateriality perspective on technology enabled my study to investigate how changes in the HRD practitioners work occurred during the implementation of this technology. The Sociomateriality lens has been applied in many studies investigating HRD practitioners use of tools. As seen in the studies of Maxim, et al. (2019) and Wiblen and Marler (2021) the application of the Sociomateriality theory in research has uncovered HR processes, workarounds, and best practices. My research continues with these efforts to identify HR professionals process and functions with the use of this analytics tool.

The HR professionals four usages for utilizing HR analytics in the training evaluation process was outline in the above *Theme 6 – HRD professionals' Utilization of the Analytics Tool (Social Practices)* and its corresponding themes: a system setup person, tracking impact, tool

administrator/executor, front line analyst, and objective analyst of the data. Theme 6 discussion provides the context for the social practice of HRD professional's utilization of the analytics tool and serves as evidence for understanding how they used the tool in the workplace. The material is the technology or to be specific the MTM analytics tool, and the activities associated with the HRD professionals using and interacting with this technology represent the social practices component.

First, the HR professional's usage of HR analytics in the training evaluation process was as a system administrator. In this study, the HR professionals utilized the technology MTM and this utilization required one or two individuals from the organization to work directly with MTM consultants. These HR professionals from the organization were responsible for setting up the dashboards, features, and functions that were essential to the organization's needs. For the purposes of my research, I identified the title of this individual as the they system administrator. The system administrator would serve as the tool administrator or executor for the organization and be the go-to person for any communication between the MTM consultants and the organization. Consequently, this system administrator would establish the intake process for utilizing this technology which become the process utilizing the tools data analytics in the evaluation process. This process consisted of how the HR professionals interacted with the system in developing the evaluations survey questions (post event and follow-up).

(2) The second way the HR professional's utilized HR analytics in the training evaluation process was as a frontline analyst. In this function, the HR professionals ensured that the development of the evaluation survey questions met the assessment needs of program initiative. This function required the HR professionals to fully engage in the ADDIE model particular in step 1- needs assessment and the final step the evaluation. No longer could the evaluation phase in the ADDIE model get address at the end of this ADDIE cycle. The utilization of the data analytics required these HR professionals to consider the evaluation phase early in this ADDIE model cycle. In this study, consideration of the evaluation process was in conjunction with determining the needs assessment for the training program. The HRD practitioners in this study established this as a standard function for their utilization of the data analytics in current and future training initiatives.

(3) The third way the HR professional's utilized HR analytics in the training evaluation process was as an objective analyst of the data. In this study, the objective analyst of the data

was the individual who interprets or translates the returning data to those organizational leaders. As outline in the above *Theme 6 – HRD professionals' Utilization of the Analytics Tool (Social Practices)* the HR professionals described the steps in which they function as this objective analyst of the data. These three steps included (a) they would pull the data/results from the MTM tool; (b) they developed a spreadsheet that provided the cost savings, key findings from the data, a summary of the data, an executive report; and (c) they would meet organizational leaders to translate this data.

(4) The final way the HR professional's utilized HR analytics in the training evaluation process was to track the impact of the training. The MTM tool provided the HRD practitioners with the opportunity to develop an evaluation plan through the selection survey questions (post event and follow-up). The selection of these questions represented the potential data for evaluating the training effectiveness from levels 1 through 5 in the training evaluation process. The post event survey provided insights into levels1 and 2 evaluations whereas the follow-up surveys provided insights into levels 3, 4, and 5 evaluations. Acquiring these additional data from these surveys assisted those practitioners to track the impact of the program over time.

In this study, how did the HR professionals utilize the human resource analytics in the training evaluation process? These HR professionals stepped into various job roles throughout this process, which were new job functions identified in the use of this tool. These job functions included as a system setup person, a person who tracked impact of the tool, as a tool administrator/executor, as a front-line analyst, and as an objective analyst of the data as they disseminated data throughout organization. The use of human resource analytics in the training evaluation process was outlined in these various job roles these HR professionals assumed throughout this Pilot training program.

5.3 Member Checking Additional Findings

An important step in the research design was to establish trustworthiness and credibility in the truth of my findings. One strategy employed in this study for achieving credibility was member checking. Carlson (2011) states member checking is an opportunity for participants to check the data to verify accuracy this entails providing the participants the transcripts from their interview's sessions for verification. This strategy was implemented in this study. Each participant responded confirming the accuracy of the data. It is important to note an important

finding from two of the participants in the review of the data. Those findings were related to the facilitating conditions or internal resources which the organization had established to assist in the utilization of the analytics. The Strategic Workforce Planning and Analytics Department assisted in support of the utilization of analytics tool and serve as another data triangulation point when evaluating a program's effectiveness. In the member checking process the participants were able to shed more light into the formation of these departments and their contributions to the evaluation of the Pilot program's effectiveness. Tracy stated,

> Strategic Workforce Planning & Analytics (SWPA) team did a deeper analysis. We did not have the expertise on our team to do regression or correlation analyses, so this team helped us with that. We did not have the expertise on our team to do regression or correlation analyses, so our team provided them with data extracts, and they completed the regression and correlation analyses and provided results back to our team.

The nature of these departments was not discovered in the initial interviews with the participants. Through the member check and review of the initial themes the participants were able to provide insight into the additional resources and support offered by the organization. This discovery has led to the revelation for potential future research that would investigate how internal resources play role in the utilization of data analytics in the training evaluation process.

5.4 Contributions of the Study

The effort to link research and its practical application to inform HRD professionals about effective practices is important (Sanders et al., 2008). According to Bell et al. (2018), there has been a lack of research that demonstrates how HRD practitioners are applying new forms of evaluations in the training process (Bell et al., 2018; Griffin, 2011). This study addresses practitioners' experiences around the application of data analytics in training evaluation. The presentation of these discoveries around the practitioners' practical application enhances the body of research surrounding HRD implementation of analytics and new approaches to the training evaluation process. This study demonstrates how HRD practitioners are applying data analytics throughout the training evaluation process. This study contribution to existing literature moves beyond the promotion of analytics in the organization as seen in past literature. More importantly, this research steps into a new direction of providing empirical evidence for HRD professionals practical application of analytics. More importantly this study

findings on the how the HRD practitioners utilize data analytics in their functions bridges the gap between HRD research and practice with respect to the training evaluation process.

5.5 Reflections on the Theoretical Framework

The two theoretical frameworks, Sociomateriality and UTAUT Theories, used in this research, provided a perspective to uncover HRD practitioners' intentions and use of the technology in this study. The use of the Sociomateriality Theory in research has often been associated with technology (Jones, 2013). Other studies have used a wide range of research approaches to provide a detailed understanding of how technology is shaped. However, the Sociomateriality perspective highlights the importance of the interconnectedness of human practices and innovative processes (Orlikowski, 2007). The findings in this research provided the context for how the HRD practitioners actualize their technology usage in this training evaluation process. More importantly, the findings support the Sociomateriality theory by showing that professional practices are interlinked within social and material relations.

The UTAUT theoretical framework in the study sought to explain the user behavior or intentions around the practitioners' acceptance of the data analytics technology. Understanding the user behavioral intentions was important in this research and served as the one of research questions in this study. Importantly, the UTAUT model has been able to provide a higher percentage for explaining user technology acceptance (Venkatesh et al., 2003). UTAUT contains four core determinants of intention and usage – performance expectancy, effort expectancy, social influence, and facilitating conditions. However, in this research only three constructs were utilized: performance expectancy, social influence and facilitating conditions. The Effort expectancy is associated with the degree of ease associated with the use of the system (Venkatesh et al. 2003). Interview questions were not centered on around the ease of the technology but were placed on intentional behavioral usage of the technology. Prior studies have generally not applied the complete UTAUT model as found in Venkatesh et al. (2003). A similar observation was made by Venkatesh et al. (2012), who noted that most studies employed only a subset of the model. The three constructs, performance expectancy, social influence and facilitating conditions offered a lens that strengthen the findings in this study. Those findings supported the UTAUT theory by providing an understanding for the HRD practitioners behavioral intentions for the acceptance of the data analytics technology.

5.6 Discussion and Implications of the Study

These findings have provided the evidence for understanding this phenomenon. The evidence has given a description into how the HRD professional utilize analytics in the training evaluation process. Those organizations, training departments, and HRD professionals who are seeking a clear understanding into the requirements and the ways practitioners have utilized data analytics can look to this study as a recommendation for the best practices in the implementation and use of data analytics. According to Heuvel and Bondarouk (2017), organizations are struggling to make the use of analytics in HRD a reality. For organizations, this study will equip them with an understanding for the internal resources and support needed to move forward with using analytic in HRD. An important organizational practice revealed from this study was the interconnection between the HRD practitioners and the internal analytics teams in their utilization of data analytics. This study revealed how the analytics team served as resource to the HRD practitioner's application of data analytics thus resulting in the success of the pilot program's evaluation process. A similar practice maybe useful for organizations in their adoption of data analytics. These internal resources and support were not only one of the key factors that led to the HRD professionals' reasons for using data analytics, but they also serve as a best practice for ensuring the data analytics results reached across the organization.

Additionally, the research implication for training departments and HRD professionals could possibly provide recommendations for the creation of expanded job roles/functions and best practices for incorporating data analytics in the training evaluation process. As claimed by Netten et al., (2019), in the near future HR analytics will be an integral part of the HRD function. The study findings revealed the processes and expanded job functions these HRD practitioners applied in their use of data analytics. These HRD professionals in this research were keenly aware of the changing landscape for utilizing analytics in their job functions. As described in this study were the various functions or expanded job roles which could assist these practitioners and supervisors for establishing similar functions and processes. The establishment of these functions and processes would prevent future HRD practitioners from diving blindly into the application of the data analytics processes. A review of these processes can also serve as a foundation for the development of any custom processes the HRD professional's may need to develop in their utilization of data analytics.

Finally, another implication drawn from this study is the use of an evaluation plan in the training initiative. The use of data analytics or not does not prevent HRD professionals from developing a systematic data collection evaluation plan early in the training development. In this study, the findings provide evidence for how these practitioners established the evaluation plan early in the development of the Pilot program. It is important to note that you don't have to use data analytics to establish the evaluation plan. An evaluation plan is not created because of the use of data analytics. The data analytics provides the practitioners the opportunity to bring together all the organizational data such as learning, revenue, and job performance data to determine the training effectiveness.

5.7 Recommendations for Future Research

According to Kapoor and Kabra (2014), HR professionals lack the skills and techniques for taking full advantage of HR analytics. King (2016) adds that the HR professionals lack a detailed understanding of analytics approaches. Hangal and Kumar (2018) say that the challenge HR professionals face in fully utilizing analytics is their lack of knowledge with the technology or tools that are central to the application of data analytics. The participants in this study initially lacked the skills, knowledge, and expertise to utilized analytics. Only one participant had prior experience with utilizing analytics in the training process. The other five participants gained their understanding of learning analytics through self-directed training from reading literature, attending webinars, conferences, and workshops. This research only scratched the surface to understanding the HRD professionals prior experience and knowledge for utilizing analytics. Future research should investigate the correlation between the HRD professionals formal training and self-directed training in their utilization of analytics. Possible research questions could look to examine; how the HR professionals formal training may or may not represent a strong foundation for utilizing analytics?; how are academic HR programs preparing future HR professionals for stepping into the application of data analytics in their careers?; and how important is the self-directed training in the HR professional acquisition of knowledge, skills, and abilities in the use of analytics?.

Finally, the limitations in this research offer opportunities for future research. In this study, the participants utilized the MTM tool for application of data analytics. There are several tools on the market that could assist HR professionals in their pursuits of applying data analytics

in the evaluation process. Future research could investigate if the use of different technology would provide similar findings in those HRD practitioners processes and practices. Additionally, an expansion in the investigation of the different technologies used in the application of data analytics could remove the lack of generalization with a specific tool. Future research in the use of analytics through various technologies has the capabilities for applying these HRD practitioners' processes and best practices. This has the potential of establishing a central reference guide for the utilization of data analytics in the training evaluation process that would be helpful for any HRD professional in their efforts.

5.8 Conclusion

This study has examined the phenomenon of HRD professionals use of data analytics in the training evaluation process. The aim of the study was to investigate how HRD professionals utilize data analytics in the training evaluation for the purposes of contributing to research on the practical application of analytics in determining training effectiveness. To this end, the study has answered the research questions relating to the factors that have influenced the HR professionals to use analytics in the training evaluation process and how the HR professionals utilize analytics in the training evaluation process? This study's findings revealed three factors that have influenced the HR professionals. Those factors included determining the training effectiveness through performance expectancy, the social influence driven by the internal influencer, and facilitating conditions or internal resources. Additionally, the results revealed four ways the HR professionals utilize analytics in the training process. These usages included as a system administrator, as a frontline analyst, as an objective analyst of the data, and one who tracks the impact of the training. This research can serve a useful reference for organizations and HRD professionals seeking to apply data analytics in their training evaluation process.

APPENDIX A. CONSENT TO INTERVIEW

Dear _____,

I am a PhD candidate in the Technology Leadership & Innovations at Purdue University. I am conducting a research study to understand how HRD professionals are utilizing data analytics in the training evaluation process. These findings will help improve the department's delivery process and identify some best practice approaches in the use of data analytics in the training evaluation process.

I'm seeking members in your organization's training department to contribute to this research study as participants. Participation would require a 60–90-minute individual and additional 60-90 minute focus group interview. All the interviews will take place either face-to-face or virtually; via a phone conference, skype, or webEx. The information you provide in the interviews will be held in confidence. I will report the findings with no organization or personal identifiers.

To learn more about the interview and the study, or to sign up, please contact: Anthony Randolph at randolpa@purdue.edu. The Principal Investigator (PI) on this project is Dr. Paul Asunda. He can be reached at pasunda@pudue.edu

Thank you in advance,
Anthony Randolph

APPENDIX B. INTERVIEW PROTOCOLS

Disclosure

Thank you for agreeing to participate in this interview. This interview is part of a research study that aims to investigate how HRD professionals are utilizing data analytics in the training evaluation process.

In the next 60-90minutes, your feedback will help answer the following research questions

1. What factors lead the organizations to utilize data analytics in determining the effectiveness of the training?
2. How are the HRD professionals utilizing data analytics in the training evaluation process?

The individual interview questions will fall under the following domains:

· Background
· Factors/Influence to use data analytics
· Practical usage of data analytics in the training evaluation process

The focus group interview questions will fall under the following domains:

· Technology
· Collaboration
· Training Effectiveness
· Future Plans and Closing Thoughts

Your participation is voluntary. If you feel uncomfortable at any point, you are free to end this interview. This interview will be recorded to help accurately transcribe your responses. Furthermore, if during or after the interview you decide you would like some part of what you said to be removed, we will ensure that the segment is not included in the transcript.
Once the audio recordings have been transcribed, you will receive a copy of interview transcript to confirm/validate your response. The data gathered as part of this interview may be shared at academic conferences or as part of a publication. However, you will never be identified in any way.

Do you have any questions? Do you mind I begin recording this session?

Individual Interviews

Background

1. What is your educational background (after high school)? If formal, What college/university/program?
2. How long have you worked in training?

3. What is your current position title?
4. How long have you been in your current position and department?
5. How long have your worked in this organization?
6. Who do you report to in the organization (their title/position)?
7. Have you worked in other positions and/or department in this organization?
    a. If so, what did you do in your previous position and departments?
8. What is your job role in your current position?

Factors/Influence to use data analytics

1. How did you become involved in learning/data analytics within your organization?
    a. Please describe
2. Please describe any internal or external influences which lead to your use of data analytics.
3. Which departments played a role in determining to move forward with the utilization of data analytics?
4. Was there any push back, reservations or holdouts from any departments in moving in this direction?
5. From your perspective, how did the use of learning analytics evolve within your organization?
6. How was the utilization of the MTM analytics technology determined?
7. How did the useability of the technology lead to this decision?
    (ease, difficulty, learning curve)
8. What resources did your company/organization offer in learning this new technology?
    (i.e – training, workshops)
9. How did you position yourself to learn the software?
10. How did you educate yourself or get informed on the methodology around the concepts of data analytics & tool and this new approach?
    a. Describe if you attended any workshops, conferences
    b. How did you become grounded in the technology & approach?
11. Was the use of this technology a beneficial or hindrance to your job and to the department/organization?
    a. Please describe
12. How did this tool help or hinder in the training evaluation process?

Practical usage of data analytics in the training evaluation process

1. In looking back at the launch of the Pilot program, describe your work - in a typical day?
2. Were you involved in the frontend design & development of the program?
3. Describe your input in setting up the tool's utilization for the Pilot program.
    (i.e. – Testing, processes, documents, meetings)
4. Did you have any input in the frontend design prior to tying the data analytics in the evaluation process ?
    a. If so, please describe
5. Describe your involvement in the Program's evaluation phase with the utilization of

the Metrics that Matter tools-MTM.
(i.e. - Establish dashboards, score cards, metrics, benchmarks, collaborating with other stockholders)

6. Please describe your organization's training evaluation cycle (Start to Finish)?
   a. with the former tools or evaluation models
   b. with the current tools

7. Please describe the process for evaluating the Pilot's program effectiveness?
   What were some of the metrics you looked to measure?
   How did you modify the evaluation process to focus on these metrics?
8. In looking at the data, what level of reporting did you seek?
   (How did this reporting appear and who analyzed this data?)
9. What role did you play in the analysis of this data/reporting?
10. What form of analysis did your organization seek?
    (i.e. – Descriptive, predictive, or Prescriptive, please describe.)
9. How did you use the data for any of these above analyses?
10. What insight did the data give you/your team?
    Was this data similar/different/helpful/less helpful from the former evaluation process? Please describe.
11. Was the utilization of data analytics beneficial in determining the Program Effectiveness? Please describe.
12. Were these results presented to those external stakeholders?
13. What internal changes occurred from the use of data analytics in this Pilot Program?

Focus Group Interviews

Technology

1. How has this analytic tool (MTM) help automated the evaluation process?
2. How was the old process in comparison this new process with the MTM tool?
3. In the implementation of MTM was there any integration into other organizational technologies? (i.e. HRIS, LMS, and Reporting performance systems)
4. How has the MTM technology assists your organization in external benchmarking?

Collaboration

1. How have each of you worked collaboratively in the data mining and reporting in this evaluation process?
2. How have your team worked to determine any anomalies and/or predictive analysis for current and future uses?
3. Have your team worked outside this core training group in the data analysis for the Pilot Program?
   a. Please describe this type of collaboration.
4. How did your team work together to determine the metrics for the training Pilot program (perceived value, learning, effectiveness, business results, job impact, and net promoter score)?

Training Effectiveness

1. What were some of the metrics you used to determine the training effectiveness in the past prior to using this new technology?
    a. Where does metrics useful in determining the training effectiveness?
2. Let's take job impact and business results and explain how has MTM determine the training effectiveness using these metrics?
    a. Please describe how you used to tool to obtain this information.
3. How is the tool assisting in measuring that Level 3 – Behavioral Change after the training has concluded?

Future Plans and Using Technology

1. What are your thoughts about using data analytics/technology to determine a training program effectiveness?
2. What are your future plans with this technology?
3. How will each of your roles change, expand or adapt with using data analytics/technology in the training process?

Conclusion

Were there any additional insights or information you would like to share with me?

This concludes our interview.

Thank you for participating! Do you have any questions for me?

We are done. I'm ending the recording.

APPENDIX C. JOURNAL ENTRY (DEC.9, 2021)

December 9, 2019

I met with participant – Tracy yesterday – December 8th. I asked the question How did you become involved in learning / data analytics within your organizations. The response was not what I had expected. I had expected a group effort of the individuals in the department to have gone to similar workshops, attend similar webinars, or maybe enrolled in similar classes. However her involved seem like a topdown approach on the type of training and exposure in data analytics. This individual was joined a two person team that obtained the direction on learning analytics from the sole expert in the company. This was more of a mentor relationship and gaining advice on how to master or understand data analytics.

They stated that they leaned on this mentor throughout the process or direction. The person sent over whitepapers to read, webinars to attend, and organizations to join, as well as workshops and books, and conferences they attend.

They stated it took 6-8 months to become grounded and comfortable with understanding data analytics.

This is the third participant interview and only person to have discussed getting ground & familiar with data analytics in this manner. I'm not sure if the others will have a similar approach to understanding and how will this individual fit in the overall process or procedure for utilizing analytics on their process. I've gotten use to an entire team gaining insight or understanding on a new tool, application, process at the same time and then develop processes for the team. – Need to revisit later

APPENDIX D. JOURNAL ENTRY (FEB.6, 2021)

February 6, 2021

Revisited December 9, 2019 entry. As I analyze the data. That approach was the best approach for implementing or utilizing data analytics with the OD&L team. This particular tool MTM required a single administrator from the organization to work with the application/software Company. It was very important that have that participant get the full training to immediately step into that role with the organization. This person was the key liason between the OD&L program managers and the software ~~technicians~~ technicians or administrators. This role didn't require multiple individuals from the organization ~~to~~ communicating with software providers. This top down approach allowed this person to train the Trainers/Program Managers on the language/communication needed to utilized the application throughout the Training initiative. Appears to be a great approach and the other team members value ~~this~~ person knowledge and assisted in their grasp of the process and use of data analytics.

APPENDIX E. EXAMPLE OF CODING PROCESS

Participant 1 - Philip	Word/Phrase	Node/Unit	Code Name
Interviewer: What is your educational background after high school? **Philip**: I received a Bachelor of Science degree in journalism from Murray state university Murray, Kentucky. After that I received a Master of Arts in human resources development from Webster university in St. Louis and subsequently received a doctorate in education in organizational leadership from Indiana Wesleyan university. **Interviewer:** How long have you worked in the training organizational development field? **Philip:** The learning and leadership development is the field I've been in for about 27 years now. **Interviewer:** What was your official work title at the time of Pilot Program? **Philip**: I was the director of organization development & learning. **Interviewer:** What department was that under in the organization? and Who did you report to? Please provide their title and position? **Philip:** It was the ODI, Organization Development and Learning and I reported to the Vice President in this department. **Interviewer:** Thank you and how long were in that position and department? Discuss your previous work experience in training. **Philip:** I was in that position for about two or little over two years. Prior to that position, I worked for five years as the director of talent solutions for the company called Metrics That Matter. I was the general manager for their learning analytics group in learning analytics for metrics that matter which was a division of corporate executive board. Prior to that worked in learning and organization development with a corporation out Michigan. **Interviewer:** In this director of organization development and learning position, what was your job role/functions? **Philip:** Starting out, I the talent team for the Indiana market for the 1st year and a lot of that was basically establishing the learning and development programs and resources, performance management, succession planning for the market which was about roughly twenty-five thousand associates. The 2nd year I moved to the national team and my	Bachelor of Science degree MA degree in HR Doctorate in Organizational leadership Learning and Leadership development Director of organization development & Learning ODI, Organization Development and Learning Director, General Manager, and Manager 5 years establishing training programs Developing learning analytics strategy Involved in learning analytics since 2002 (18years experience)	**Education** **Experience In Training** **Experience In Learning Analytics**	**BA** (Bachelor's degree) **MA** (Master's degree) **DOC** (doctorate) **YOTE** (years of training experience) **PJE** (prior job experience) **PEJD** (prior experience job duties) **YOEWA** (years of experience with analytics) **RAE** (Resident Analytics Expert)

primary role was in developing and launching a learning analytics strategy for the organization which was roughly 160,000 associates nationwide in the US. **Interviewer:** How did you become involved in learning/data analytics? **Philip:** Well for me, it started back even farther. So back in 2002, I joined an organization here in Indianapolis, Anthem blue cross, and blue shield as their director of leadership and associated development. We acquired an organization, empire blue cross and blue shield out of New York. With that acquisition they had a relationship with the company metrics that matter which was a learning analytics, software and methodology that they had been using to measure their learning and development. I went up and saw what they were able to do at empire blue cross and blue shield and we adopted it and spread it across the rest of Anthem at the time. That was kind of the start to doing learning analytics and leveraging that software and methodology across the entire enterprise at Anthem blue cross and blue shield. When I left there and went to company in Michigan I took that methodology and technology with me to that organization and then I guess, it gave so much credit to the fact that it helped my career and I saw so much value that I went to work for that company initially as a consultant.	Career became focused on learning analytics		

APPENDIX F. CODEBOOK

Abbrev Code	Code	Description	Example
A	Autonomy	Many departments across the organization had been doing evaluations a certain way for years that they didn't want to align to the new evaluation standards with the new tool.	Initially many of the markets didn't like to be rolled up into a system level solution. They liked their autonomy, and had their own method of evaluating training. They didn't necessarily want to align, to a national solution.
BA	Bachelor's Degree	Participant educational experience after High School	I have a bachelor's degree in Human Performance and Systems Technology…..
BATOA	Building a team of advocate	Steps taken by the individuals who were responsible for incorporating the new tool. Building a team of advocates, partners, and users to gain acceptance or buy-in.	… our approach to how we can help this process was through communication. We picked a smaller team of about 10 individuals who were heavily involved with the evaluation process. We brought this team together and we got them grounded in the learning methodology. It was a partnership…..
BE	Backend Expert	A function in the utilization of the new tool required a backend expert who would work with the MTM team to set up the evaluation questions and data reporting	… the backend process involved determining what we were focusing on evaluating. Setting up the back-end reporting and data analytics from those driven questions.
COTFE	Collaboration on the front end	Another step in utilizing the analytics tool is collaborating with the tool executor to	… partnering with the tool executor to design the questions by looking at the needs assessment

		design the front-end content design	and what we were trying to do and what were trying to understand from the evaluation. The collaboration allowed us to tweek the questions so that we could get the data and understand if it applied to the learning and skills.
DAEP	Develop an Evaluation Plan	A step in the evaluation process is developing an evaluation plan.	… this required establishing our dashboard or scoreboard based on the evaluation methodology. Based on multiple levels of evaluation, satisfaction level, ROI, and enabling metrics.
DHCS	Data helped create standardization	Obtaining the data through the new tool helped develop a sense of standardization across the organization.	… getting the data was like Christmas day for me, because we could see with actual hard data that was relevant to what we were doing. We were getting feedback based on the quality of the course-ware, learning effectiveness, the perceived value, and the facilitation. It was data we'd always wanted to help us understand what we could do to improve the quality of the content across the organization.
DHCTC	Data helped change the context	The data received in the evaluation process through this new tool helped change the overall design process in the learning context	… the data really helped each of the markets dig deeper into the data to determine why they were getting low scores and to understand if the content needed changes.

DOC	Doctorate Degree	Participant educational experience beyond master's degree	… I received a doctorate in organizational leadership….
DPA	Data Provided Answers	Acquiring this data using the analytics tool provided answers they had always wanted to achieve through the evaluation process.	… one the benefits is achieving deeper learning and being able to match the learning with business results through the data and not having to do all the statistics yourself.
DPCICN	Data pinpointed changes in the context	The data identified specific areas that required changes in the training context.	We now had data to point the problems with the content. The data gave us something to point to and allow us to say we go to shift the design of the content.
DSRS	Data Shows ranking score	The data from the analytics report ranked the scores of the various departments across the organization	… the data provide a ranking each market from the scores calculated in the data from those market training programs…
ETUT	Eager to use tool	Due to the lack of tools to measure the training effectiveness, the individuals in the training department were eager to begin using new tools.	… I was already sold on measuring things in training and development and hearing that we had a new tool that would provide more robust measuring/metrics, I was ready and the best way to get started it to just start measuring with this new tool.
EXE	Executor of the tool	Within the organization there were only a few individuals who executed functions with the new tool	… we had a point person within our program that we could reach out directly and with partner with that person to develop the surveys and evaluation info that needed inputted into the system…..

ERY	Eliminate Reluctancy	Steps the training team involved in this initial Pilot Program took to remove fear of using the new tool.	…we would show the leaders what we have delivered and results from the data.
GOOB	Getting others in the organization onboard	Another role as an advocate of the tool is getting others in the organization onboard to use the tool for their programs.	… after conducting the pilot we basically started using the pilot to showcase to the other market groups. When those market groups presented a new training program we would demonstrate how the pilot achieve its results from the data and we would walk them through how to add this analytics piece to their program.
IIOT	Internal influencer of the tool	The individual who influenced the use of the analytics tool internally within the organization.	The VP mention that they really had no idea whether they were getting a kind of return on investment for training for all the money they we're putting into associate development both clinical and soft skills training. Since I had come from a learning analytics company MTM, I suggested that we take one of the programs that was running across the organization create a pilot program
ISOT	Initial Scaling of tool	Before they utilization the analytics tool it requires the initial scaling of the tool by one or two individuals to identify important performance components. This is referred to as the intake process.	… this would require setting up the specific evaluation data in the system – MTM….

L3A4	Level 3 and 4	The new tool provided data that gave insight into Kirkpatrick Level 3 and 4 behavior changes and impact on the organization.	… one of the biggest achievements with the tool is that we had a lot more potential capabilities to be able to see more than what we had in the past. We took one step further in our evaluations. We are now able to correlate data that should tell you if there is a bigger correlation between behavior change and the learning.
LL	Lesson Learned	The lessons learned in using the new tool	… the biggest lesson learned, is that you have to present the data in a way that your organization is able to use. This was extremely helpful in getting our most senior leaders on board with the use of this new tool.
MA	Master's Degree	Participant educational experience beyond bachelor's degree	I pursued a Master's degree in Industrial Organizational Psychology.
MS	Mindset	The instructional designer need to have a mindset for organizational development and evaluation	… having a background in training gave me the understanding for the power of evaluation and metrics. It was a natural progression.
NRFCEP	Not responsible for creating the evaluation process	Not all the individuals working on the Pilot was responsible for creating the evaluation process with the new.	… I was a program managers on the Mission Formation Team and work alongside with this Pilot program, but we didn't have a lot of insight and they worked to develop the standard evaluation process that

			would eventually roll out across all the sites.
ORAS	Organization established resource and support	To assist in the facilitation of the new tool the organization established resources and support	… the organization creation of the Strategic Workforce Planning Department and the Visier Analytics Team assist in giving us the support the utilization of this new tool.
PA	Predictive Analytics	Level 2 form of analytics and answer the questions of What will happen and Why will it happen.	The tool allowed us to obtain info from the post event using a predictive analytics approach by asking questions related to behavior, impact on job, organizational changes. We tied some macro business measures into these questions.
PJE	Prior job experience	Participant past job experience in training and development	… I started out more in a back-office training role…
PFUA	Pioneer for using analytics	The individual(s) who had past experience using data analytics in the training process became the expert in the organization. This person(s) was the pioneer or resident expert.	Since 2002, I had a relationship with the company Metrics that Matter MTM, which was a learning analytics, software, and methodology company. From here I moved into positions which leverage my expertise in the software and analytics
POC	Proof of Concept	The team implementing this initial Pilot using the new tool was tasked with establishing a proof of concept or argument to use across the organization.	… we took one of the training programs that was being run across the organization and create a pilot program using the analytics tool by MTM. We pulled the information to make sure that we could measure and tested the pilot….

			We did the proof of concept.
PPWL	Previous Process was limiting	The previous evaluation process prior to the new tool implementation was limiting.	… in the old evaluation process, we didn't have the access to the immediate turnover data that we can pull from the new tool.
RAC	Role as a customer	Those individuals implementing this new tool had to function as Customer.	…. since the technology was owned by our team and each of us was involved in the implementation. I was a customer by using the tool for the first time.
RACFC	Role as a champion for the cause	Those individuals implementing this new tool had to function as Champion or cheerleader for the cause.	… I also was sort of a champion for the use of the tool for those market who were new to obtaining this type of data.
RAE	Resident Analytics Expert	The person in the organization who was the resident analytics expert	Our past Director had a relationship with MTM from his previous work experience. He was the expert that move our department to sign a contract with MTM.
RAS	Role as a salesman	Those individuals implementing this new tool had to function as salesman with other team members in organization.	We shared the results with the market planning teams and interacting with the HR directors & HR VPs across the boards. We were able to help them understand what data means, what they were seeing, and understand the changes that were needed to make from a national level.
RATSC	Role as a tool scalable coach	The individuals implementing this new tool had to function	….I would have weekly meetings and meet with

		as coach by directing others on how to use the tool effectively.	each individual designers and subject matter expert who was supplying the content. We would talk about the development and how we would plug this tool in for the evaluation. We discuss how we take this content and apply in the utilization of the tool.
RBC	Ranking brought about collaboration	The report rankings of the various departments across the organization present collaboration amongst the various departments on how one department was able to improve or leverage the new tool in their program	… we work with each market and the ranking of the scores on the different reports helps pull together some conversations with all markets. We have conversations among the markets in these calls on what one market did to achieve a higher score and what steps another market should take…
RR	Receive the reports	A step in the evaluation process using the new tool in which certain individuals received the evaluation reports.	… we would see the reports that would go out to all of the markets and then we were able to see the end of the quarter summary of all the data which highlighted where each of the markets fell within their rankings.
RY	Reluctancy	The hesitancy and reluctancy of departments with the new evaluation process with a new tool	… there was reservations around the unfamiliarity and perceived complication in using this new tool as well as how to extract the data. … there was not much reservations around the opportunity this tool could offer regarding the data.

RYNR	Reluctancy due to lack of resources	The reluctancy of departments because there was a lack of resources.	…. the main pushback reluctancy was a pause from the other departments and wanting to understand if what we were currently doing in the evaluation process would this new process be duplication of effort and what would the new process look like at the end of the training session….
RFTS	Ready for the shift	Individuals in the learning/training department were ready for the shift or change in using a tool to measure the training effectiveness.	… I believe we all in the department were ready for the change in obtaining data we always dreamed about getting…
RM	Reporting Manager	Who is the reporting supervisor/manager in the training department?	…. as a program manager I report to senior director
RS	Resources and Support	The departments in the organization began collaborating on the use of the new tool and looked to each other as a resource and support.	… our support structure came with the rest of our organization development and learning team. The organization created a support team the Strategic Workforce Planning & Analytics (SWPA) team….
RTD	Reviewed the data	Another step in the evaluation process with this new tool was reviewing the data and focusing on how to make improvements in the training program.	… we get automated emails that includes the data from the system for that program. I would review the data and set up meetings to share the data with my stakeholders.

SA	Standardization	The new tool provided standardization	We were able to create some standard templates in the frontend and backend questions which we could modify in future training programs. It also helped us automate those evaluation surveys to users and distribute after the training event.
STD	Shared the Data	Another step in the evaluation process with this tool was sharing the data among the team members. This sharing involved discussions on how to leverage the data.	I would pull together that national design committee and share the data with them. Then they would take the data to their markets……
SP	Scalable Process	A process that could be used across all the programs throughout the organization	The tool provided a more consistent and more scaleable able function across all of our programs. Prior to the use of the tool we didn't have anything central, we didn't have any sort of singular tool or a consistent process for evaluating our learning and the effectiveness of our learning and development programs.
TBS	The tool brought structure	The participants believe the new tool provided structure in the former unstructured evaluation process.	…. the utilization of the tool provided us a way to implement procedural process in our evaluations
TASD	Transparent and sharing the data	Another step in the evaluation process with the new tool is being transparent and sharing the data results with those individuals within the organization.	….based on the program I would send all the individuals involved the event reports to the local planning team and whoever partnered on this program. It could be the Program Manager and some cases it may be

			a team of 2 or 3 local planning team members. I share the results with everyone involve. Once the local planning teams received their reports, we also shared it at a higher level with the executives and to our governance boards so that they were also aware of how these programs are operating. We would share it to anybody that wants it in the organization
TDISS	Turning the data into a spreadsheet	Another step in the process with utilizing the tool required the participants to turn the data into an usable reporting spreadsheet.	… we need to put together understandable report from the data using Excel to show the breakdown. For example, recently with our regulatory compliance, we pull down some of the data, and we created an Excel spreadsheet and crunched some numbers to be able to show what the productivity savings were for that particular project, dollar-on-productivity savings. So this step could be anything from drafting a summary, an executive report, excel, and some sort of data integration.
TWCWT	Those who closely worked with the toolmaker	Only a select few workers from the organization worked closely and collaborated with the software company of the new tool.	Our resident expert with analytics worked directed with the software company MTM. This person did a great job of collaborating with us and allowed us to not get tied down in those setup questions but to focus on

			tying the content to this new form of evaluation.
UESP	Unstructured survey process	An evaluation process that was unstructured in which randomly poor questions were asked in the survey	… each market has a local planning team that takes our content and delivery to their market. They all had their own evaluation process they used in the delivery of the content. There was no standard process each market used in the evaluation. … like other companies we were using Survey Monkey and another survey tool call Red Cap.
YOEWA	Years of experience with analytics	Participant past and current years working with learning analytics	Since 2002 I have been working in some capacity with learning analytics….
YOTE	Years of training experience	Participant years of working in Training and Development	… I have been involved or working in the this field of learning and training for 7 years.

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