Jani Tiippana

USE OF THE PERSONALIZED LEARNING PLAN IN THE END-USER TRAINING

CASE- JYU: BUSINESS INTELLIGENCE SYSTEM END-USER TRAINING

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Tiippana, Jani
HOPSin käyttö tiedolla johtamisen järjestelmän loppukäyttäkoulutuksen yhteydessä – Case JYU tiedolla johtamisen järjestelmän loppukäyttäjäkoulutus
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Tiedolla johtamisen työkalut ovat yhä suuremmassa osassa jokapäiväistä johtamista organisaatiossa ja sitä myötä myös tarve niiden koulutukselle, jolla voidaan taata järjestelmän mahdollisimman hyvä käyttöönotto ja omaksuminen korostuu. Opiskelun suunnittelu on ollut käytössä ainakin suomalaisessa koulutuksessa jo pitkään ja tämä tutkimus liittää sen osaksi tietojärjestelmäkoulutusta. Tämän tutkielman tavoitteena on selvittää miten henkilökohtainen opiskelusuunnitelma (HOPS) liitetään osaksi tietojärjestelmän loppukäyttäjäkoulutusta ja mitä vaikutuksia HOPSilla on tietojärjestelmän loppukäyttäjäkoulutuksen tavoitteisiin ja sitä kautta vaikutuksia teknologian käyttöönottoon henkilön tasolla. Tutkielmassa lähestytään aihealuetta organisaation jäsenten kautta, yksilötason oppimisen näkökulmasta. Empiirinen laadullinen tutkimus suoritetaan case tutkimuksena Jyväskylän Yliopiston Microsoft Power Bi järjestelmän käyttöönottoprojektin yhteydessä. Tutkimustulokset kerätään elektronisella kyselylomakkeella. HOPSin vaikutukset ulottuivat laajalti loppukäyttäjäkoulutuksen tavoitteiden osalta ja tutkimus osoitti, että HOPSilla on mahdollista lisätä käyttäjän kokemaa hyötyä järjestelmästä ja alentaa koettua ahdistusta uuden järjestelmän käyttöönoton osalta. Tutkimuksen teoreettinen malli ehdottaa, että parantamalla loppukäyttäjäkoulutuksen tuloksia, voimme positiivisesti vaikuttaa teknologia käyttöönottoon.

Asiasanat: tietojärjestelmä, tiedolla johtamisen järjestelmä, loppukäyttäjäkoulutus, itseohjautuva oppiminen, teknologian omaksuminen

ABSTRACT

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Business intelligence systems and tools are more often part of daily work in many organizations, and new business intelligence systems are being implemented more and more. Therefore, the need for good end-user training is highlighted. In the Finnish schooling system, the concept of a personalized learning plan to organize learning has been used in the past for guiding the studies and learning. This study uses the concept of a personalized learning plan suited for information system end-user training and attaches it as a case study to the University of Jyväskylä business system implementation projects end-user training. The study has a goal to find out how to use the personalized learning plan in end-user training and if it has positive effects on end-user training goals and, therefore, could boost system adaptation on a personal level. This is an empirical case study that uses mixed qualitative and quantitative methods. The results are collected with a questionnaire and semi-structured interviews. Results showed that the effects of the personalized learning plan (PLP) can have positive effects on the end-user training goals. Further, the study showed that the personalized learning plan could increase the perceived benefits from the system and decrease end-users stress and anxiety during the new system implementation. The theoretical model suggests that by increasing the end-user training goals we can positively impact the system adaptation.

Keywords: information system, business intelligence system, end-user training, self-regulated learning, technology acceptance

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1 Introduction

1.1 Motivation

Business Intelligence (BI) is becoming a new standard for companies and organizations that wants to stay competitive. The notion of analytical method of making sense from data dates back to the 18th century; one difference to the current day is the rapid pace of data that is possible to harness online. Which makes BI a vital concept (Agarwal & Dhar, 2014; Trieu, 2017). Current literature states that organizations have not been able to capture the benefits of BI systems and are seeking a way to leverage the full potential and value of the systems. Also, prior studies and papers do not discuss the issues, nor the challenges related to the adoption, utilization, and success of BI systems. (Ain, Vaia, DeLone, and Waheed, 2019)

In order to improve the adoption of new technology and mitigate the risk associated with adoption, the decision-makers are actively looking for new training design features that will improve the project return on investment (Harris, Mills, Fawson, and Johnson, 2018). Harris et al. (2018) mention that according to the estimates, nearly 150 billion dollars is being wasted every year on failed information system implementations. He also suggests that the amount in the European Union is estimated to be about the same size. Despite this money wasted, organizations keep on investing in the new system in order to gain a competitive advantage, improve efficiency and streamline operations. Harris et al. (2018) mention two themes that often emerge for IT implementation failure. First, failure is poor management and, more interestingly, second, lack of user acceptance. Business intelligence systems and analytic software applications as an investment are increasing interest for organizations all around the globe, and the market size is estimated to rise from 15,2 billion in the year 2019 to 18 billion in 2025.

Yet this field of information systems is merely a subsegment of the enterprise application software market (Liu, 2022).

The case study for the University of Jyväskylä is made to find out how end-user training for information systems, and in this case, business intelligence system could be improved. This study will provide the reader with new information about how organizational system implementation methods, end-user training compound with the personalized learning plan affect the implementation of the business intelligence system and how users perceive the system.

A literature review creates a base for understanding business intelligence systems; further, it describes technology adoption and user training in information systems in organizations. According to the literature review, business intelligence end-user training can benefit from a facilitated group workshop where attendees conclude a personal learning plan. The study's idea is to get insights from end-user training combined with the personalized learning plan and see how it affects the learning and adoption of the new business intelligence system in case JYU.

This study explains the idea of end-user training combined with the personal learning plan and the scientific background to support it. End-user training aims to teach and train users to use an IT system. End-user training can consist of one or several training sessions where the training happens. In this concept, the study implements a personal learning plan for end-user training with two additional workshops. Know-how and intention to use are some of the goals of the EUT training, and these goals ensure that the software being taught is also used. Nelson et al. (1995) state that training goals, which are the desired outcomes of the training process, either explicitly or implicitly, have always been the critical point of end-user training literature. Garud (1997) writes that knowledge gained from training programs and EUT presents the individual's abilities and understanding of how the system can be applied to a business task.

Successful learning strategies are critical for organizations to gain the most from training and software investment. Many strategies include reflective thinking during the learning process. Strategies might be related to goal-setting habits or involve analytical thinking and self-monitoring (Gravill and Compeau, 2008). Azevedo and Cromley (2004) compared students who had significant differences between conceptual understanding during the task and found out that majority who made considerable gains in conceptual understanding also engaged in planning and forethought activities and used learning strategies such as summarizing and making inferences.

Gupta (2010) states that learning outcomes that should be studied are the effects of various learning methods on the adoption and fluent use of the information systems. Primarily since training has been found to affect technology adoption significantly.

1.2 Research Question

This study aims to test the concept of the personalized learning plan as a case study on the implementation of a business intelligence system for the University of Jyväskylä. Foremost the study focuses on implementing the personalized learning plan together with system end-user training and test its effects on the goals of end-user training and how it might affect the adaptation of new technology, in this case, adaptation of the business intelligence system on a personal level. The main research questions focus on using and implementing the personalized learning plan tangible together with end-user training.

> How to use the personalized learning plan as part of end-user training?

The end-user training has been studied to have effects on the adaptation of technologies, and research has been proposed to find out how IS training could be improved (Gupta, 2010; Harris et al., 2018). Due to this, the sub-research questions focus on the effects the personalized learning plan has on the goals of end-user training.

> How does the personalized learning plan affect the goals of end-user training?
>
> What areas of the end-user training goals does the personalized learning plan support?

Previous research has lacked the research or testing new methods for improving end-user training. Through the research questions, the study tries to get a profound insight into the personalized learning plan combined with end-user training, whether it improves the outcomes of system end-user training, and if it could be implemented into commercial use.

1.3 Structure of the thesis

The structure of the thesis is presented in this chapter. After the introduction, the motivations for the study and research question are presented. Theoretical background explains the theory supporting the study. The chapter presents a definition for the topics such as business intelligence systems, end-user training, self-regulated learning, and technology acceptance. The third chapter is Research model: The personalized learning plan. This chapter presents theoretical background for the personalized learning plan and how it was used in the study. Chapter four, the research design, collects the context of the study and describes the data collection and analysis methods. In chapter five, Empirical findings, the results are presented and valued against existing literature. Chapter six:

Discussion is where the results limitations of the study are concluded, and future research opportunities are presented. The last chapter, Conclusions, gather the study's findings and compares how the research questions were answered, as well as limitations of the study and last future research opportunities.

2 Technical background

This chapter will show the technical background which supports the study's empirical findings and builds an understanding of the theories and technologies which lay a foundation for the research. The chapter starts by introducing business intelligence (BI) as a concept and elaborates on the overall field of BI and its systems. Latter, the chapter goes through fields in End-user training (EUT), technology acceptance, self-regulated learning.

2.1 Business Intelligence

BI has many names and can mean different things to many people. Howson (2014) mentions in her book a broad category of terms which people consider as business intelligence or might use as a synonym for BI. These terms are such as market research, reporting, business analysis, decision support.
In short, BI is leveraging the data organization produces to improve processes. Howson (2014) states that BI reveals the performance, operational efficiencies, and untapped opportunities. BI is a set of technologies, applications, and processes that allow people of the organization to access view and analyze the data the organization produces. Technologies act as an enabler, but successful BI needs the people to interpret the information and act based on that. The people in an organization are the ones who will make the BI efforts either success or failure. BI is in close contact with IT due to technologies and applications used, for example, retrieving and processing the data. However, successful BI is about culture, creativity, and whether people see data as a critical asset.

2.1.1 Business intelligence architecture

The business intelligence system refers to multiple technologies and techniques for collecting, processing, and demonstrating the data into knowledge that decisions could be based on. Figure 1 Typical business intelligence architecture demonstrates a framework for BI system and related components.

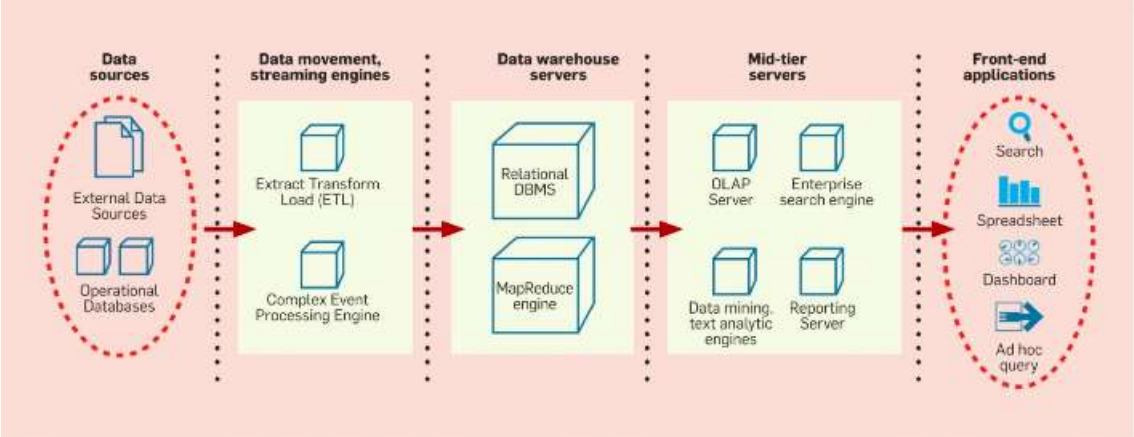

FIGURE 1 Typical business intelligence architecture (Chaudri et al., 2011)

The data which BI requires usually comes from multiple different sources such as operational enterprise systems, databases, or external vendors. External sources could even be open data sources. **Data movement, streaming engines:** Due to the data extracted from the sources is not consistent by quality, which means that codes, formats, and representations are not matching. It is part of the extract transform and loading process (ETL-process) to fix these issues. **Mid-Tier servers** complement **data Warehouse servers** for data storing and provides functionalities for different BI scenarios. Specific reporting servers enable the data definition, rendering of reports, and execution. Rendering could be functionality such as viewing total sales by region or comparing sales to the previous year efficiently. **Front-end applications** are the applications through which users deploy BI in use. These applications, such as Microsoft Power BI, enables users to track key performance indicators (KPIs) of business to make decisions, make ad hoc queries and dynamically explore patterns and cover relevant data for BI. (Chaudri et al., 2011)

The ultimate goal for BI is to produce intelligence through the process. Intelligence is extracted from the data organization produces. Data acts as a

base level from which information is extracted and processed into intelligence.

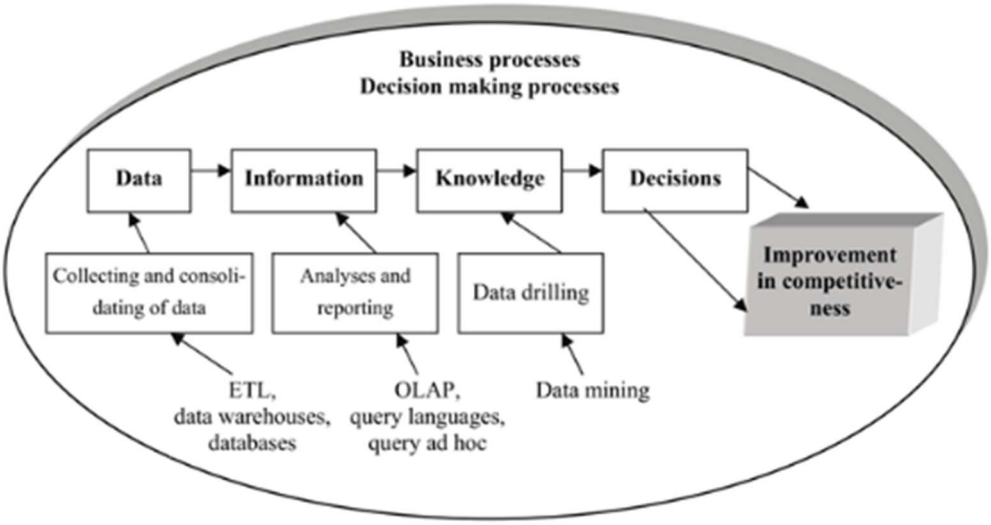

FIGURE 2 Business processes and decision-making processes (Effah J., Senyo P. K., & Opoku-Anokye S., 2018)

Figure 2 presents how business intelligence system architecture processes data into intelligence and decisions. There are four stages of the BI system: data, information, knowledge, and decisions.

2.1.2 Business intelligence systems

Business intelligence systems are programs that utilize BI. Organizations address challenges and opportunities through these systems. Business intelligence is often referred to as an umbrella term forming processes, concepts, and methods that improve decision-making using support systems, which are the business intelligence systems. Terms such as business analytics, big data, data mining, and data warehousing are often used interchangeably in the literature. Business intelligence systems are also referred to as decision support systems in the literature. Decision support systems (DSS) and business intelligence systems self are referred to as both data and model-oriented decision support systems. (Trieu, 2017)

In the markets, there are nowadays BI-systems from multiple companies such as Microsoft, SAS, Tableau, and Qlik. The product, for example, Microsoft offers is Power BI. Microsoft's own documentation describes the product as "a collection of software services, apps, and connectors that work together to turn your sources of data into coherent, visually immersive, and interactive insights."

2.2 Technology adoption

Organizations adopt new technologies in an exceeding phase. Information and communication technology (ICT) systems improve business processes and operations (Amadi-Echendu and De Wit, 2015). Competitive pressure to increase the organization's performance drives more investments towards the information technology even though these investments are risky and might fail if managers fail to understand what it takes from purchase to implement the system within the organization successfully (Agarwal, Parasad, Zanino, 1996).

There are several different models formulated from IS and IT. These models have roots in psychology and are used to predict the intention to use technology. These models are such as Technology Acceptance Model (TAM) (Davis, Bagozzi, and Warshaw, 1989), Technology Acceptance Model 2 (TAM2) (Venkatesh and Davis 2000), Technology Acceptance Model 3 (TAM3) (Venkatesh and Bala, 2008), Theory of Diffusion of Innovations (DIT) (Rogers, 1995), the Theory of Reasoned Action (Ajzen, 1985), Theory of Planned Behaviour (TPB) (Azjen, 1985, 1991), Decomposed Theory of Planned Behaviour (Taylor and Todd, 1995)

Based on prior technology acceptance research, Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT model constructs four parts, which are: performance expectancy, effort expectancy, social influence, and facilitating conditions that affect behavioral intention to use technology. Venkatesh et al. (2003) define different parts as follows: Performance expectancy is defined as how the user believes the technology help one to improve job performance. Effort expectancy is defined as the degree of ease of use of the technology. Facilitating conditions is defined as the degree to which organizational and technical infrastructure can support the use of technology. Last Social influence is defined as how an individual believes how others see the importance of know-how of using the technology.

As Venkatesh et al. (2003) write, factors such as performance expectancy are related to how useful the system is expected and perceived to be. Effort expectancy is seen as how easy the system is to use. End-user training programs are usually designed to help users use the technology, make better use of it and so on, increasing job performance (Marshal, Mills and Olsen, 2008). UTAUT model does not explicitly address training as a construct both before and after implementation (Harris et al., 2018).

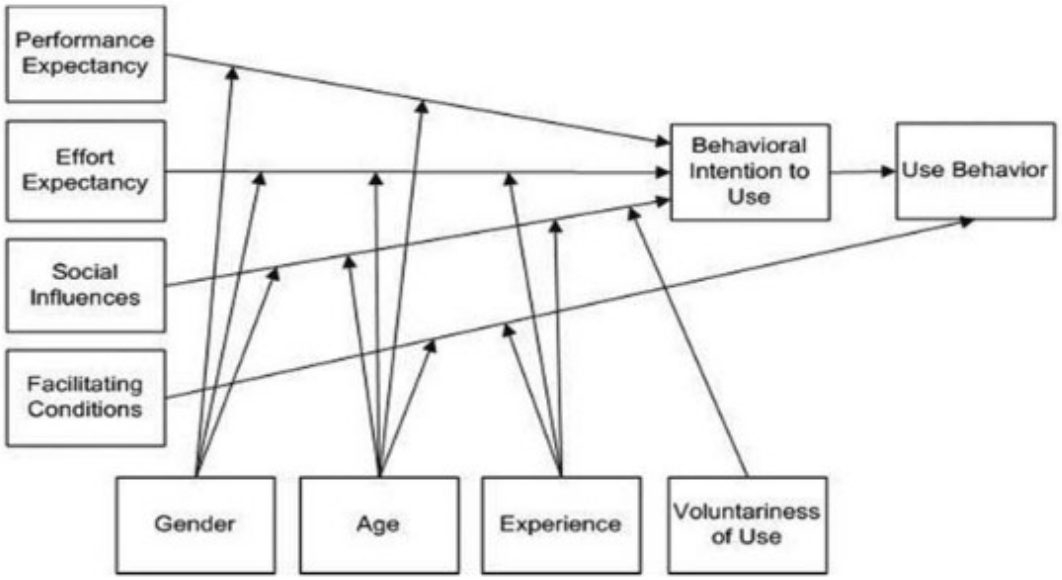

FIGURE 3 The unified theory of acceptance and use of technology (UTAUT) (Venkatesh and Davis, 2000)

2.2.1 Business intelligence system adoption

Business intelligence system adoption does not differ much from other information system adoption. Nevertheless, some critical factors related to BI system implementation have risen in research, supporting the research problem and questions in this thesis.

A study by Yeoh and Popovič (2016) and Yeoh and Koronios (2010) named CSFs such as commitment management, support the clear vision and established goals, business-centric championship, user-oriented change management, interactive development approach. In this study, the interest lies in user-oriented change management, which includes training to be listed as a success factor for BI-system implementation. Ali and Miah (2018) have concluded the latest research from organizational factors on BI implementation. Interestingly they have found areas such as technological capability and personnel capability, among others, to affect the BI implementation.

Ali and Miah (2018) refer to Byrd(2001) that technological capability is the ability of organizations associated with the readiness of technological infrastructure managers to use, deliver, describe, and process relevant information to the required application. Personnel capability is stated as a crucial aspect since one can not use desired technology without having the skills to use it. A study by Kannabiran and Dharmalingman (2012) argues that personnel capability appears to be one of the crucial factors contributing to BI implementation. Personnel with

the right skills and know-how leverages the effectiveness and efficiency of BI applications (Burton et al., 2006).

2.3 End-User training

End-users of technology often receive training to make the adoption of new technology easier or more possible. Emerging areas such as information security and business intelligence have a high demand for end-users to adopt technologies (Marshal, Mills, and Olsen, 2008). Marshal et al. (2008) state that in the domain of technology acceptance, end-user training is a significant factor that influences users' behavior toward acceptance, satisfaction of the technology, and job satisfaction. In a later study by Harris et al. (2018), he argues that the result of training goes beyond learning something; it rather impacts the behavioral intention to adopt new technology.

End-user training (EUT) offers participants the right set of skills to use the system, also motivated to use the system to enhance work and apply what is learned during the training to perform job-related tasks. According to research, EUT should involve three distinct phases: Initiation, formal training and learning, and post-training. The initiation phase is the pre-phase, where the training materials and methods are developed. Second, comes the formal training and learning phase, which considers the training method, such as face-to-face, video, computer-based, or combination of previous. The third phase is post-training, which has a focus on the evaluation of training and learning. (Compeau, Olfman, Sein, and Webster, 1995).

Training methods such as instruction classroom training, behavior modeling, on-the-job training, and eLearning, plus an increasing number of new methods has limited evidence to verify the effectiveness of EUT in a real job setting in an organization to enhance job effectiveness. (Mahapatra and Lai 2005) This indicates a lower value from the training to the organization because outcomes of the training are not transferred to performance. (Goldstein and Ford 2002; Kirkpatrick 2007) Thus implying that methods improving the outcomes of EUT is needed.

Computer-Based-Training (CBT) is one way of providing EUT. In the most typical situation, CBT is where the user sits in front of a computer, which presents information on the screen. The student reacts to the training and performs actions based on it with the computer (Grupta et al., 2010). In one example, the student uses the system for the EUT and performs tasks while simultaneously following the trainee in front of the class, online, or from the recording. Nevertheless, another way for providing EUT is Learning-with computers, which means that the students use computers as a tool of learning and, at the same time, guided by the trainee. This method supports existing pedagogical tools and techniques, and it has a specific interest in this study since it is the primary method of EUT in the case study (Grupta et al., 2010).

The social aspect of the EUT is the core where learning occurs. Still Gupta et al. (2010) argue that EUT research lacks an aspect where the focus is mainly on learning.

Research from educational psychology and IS (Andersson et al., 1994; Bloom, 1984; Mahapatra et al. 2005; Grupta et al. 2010) have classified training goals into four categories: skill-based goals, cognitive goals, affective goals, and meta-cognitive goals.

Skill-based goals have a focus on the ability to use the target system. These goals are knowledge about the set of commands, structure, and meaning in the target system.

Cognitive goals mean the mental awareness and judgment of the user. It refers to knowledge about applying the tool and functionalities to business processes.

A*ffective goals* target the emotional aspects of user behavior. Affective goals include active sub-goals such as *motivational knowledge* (the knowledge about what system can do for the job or organization and the importance of the system), the second active goal is *satisfaction with the training,* and last *perceived anxiety,* which handles with a feeling of tensions, apprehension, or uneasiness in the goals of using the target system.

Meta-cognitive goals are individuals' knowledge regarding their learning and information processing processes.

The goals for end-user training acts as a profound base for inspecting the effects of the personalized learning plan. End-user training is argued to have positive effects on technology acceptance. Harris et al. (2018)

2.3.1 Technology acceptance model for End-user training

UTAUT literature claims that the method suits to design training and marketing challenging. It seems that the features in the UTAUT model are only addressed superficially rather than the model's construct. The UTAUT model's areas such as "*external conditions*" and "*facilitating conditions*" suites capture information related to assumptions that training is related to technology acceptance. (Harris et al., 2018)

Implementation and use of software in an organization may be mandated. Since the TAM model assumes the use of the technology to be voluntary, the most relevant model for adoption in organizations would be one with the mandated use of technology (Harris et al., 2018). Marler, Liang, and Dulebohn (2006) studied the relation between training and effective employee technology use. They found that opposed to the TAM in a mandated use environment, ease of use and usefulness do not correlate the relationship between training and intentions to use the new technology. However, they found still a significant relationship between training reactions and intention to use also related to the perception of resources available to the employee. Harris et al. (2018) argue that these findings relate to the facilitating conditions construct found in the UTAUT model. Also, Venkatesh et al. (2003) found a relationship between facilitating conditions and

actual use of the technology. Harris et al. (2018) state that it is a widespread acknowledgment by researchers and practitioners that training is a critical factor in predicting technology acceptance and use, but no model incorporated these features together.

Harris et al. (2018) constructed a study that tested well documented UTAUT model with an added training construct. The pre-training and post-training surveys on the study were identical in measuring nearly all of the UTAUT model constructs. One hypothesis was that Training reactions (TR) are positively related to behavioral intention to use information technology (BIU), which turned out to be correct. Another hypothesis was that Performance Expectancy (PE), Effort Expectancy (EE), and Social Influences (SI) positively affect behavioral intentions to use information technology. The study shows that only (PE) was a significant predictor of BIU, which Chauhan and Jaiswal (2016) argue to be a significant factor to positively impact behavioral intention to use in Enterprise Resource Planning software training. The final hypothesis, which affected positively and was correct, is experience. It positively affects TR and BIU. Harris et al. (2018) state that the previous studies have suggested training as a tool for improving technology implementation. His study demonstrates that training positively impacts technology acceptance within the context of the UTAUT model. The study suggests that the UTAUT model with TR as a construct to better capture BIU. Harris et al. (2018) argue that including Training reactions may simplify the data collection and eliminate some of the other variables suggested by the UTAUT model.

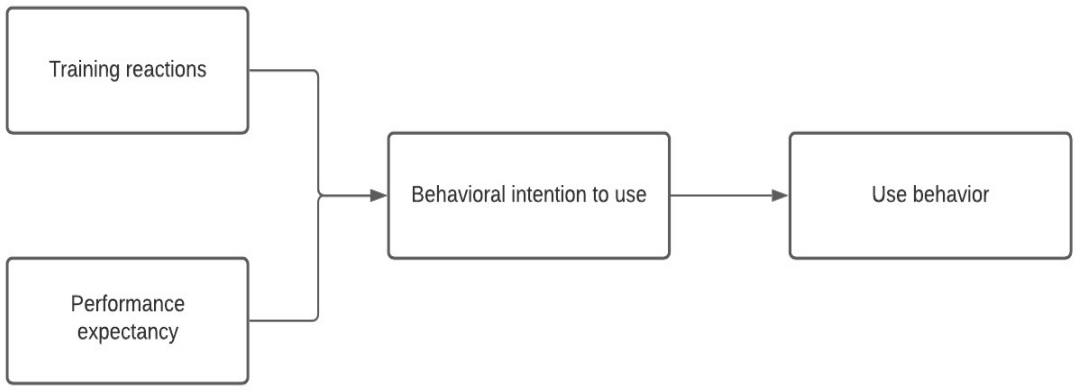

FIGURE 4 Simplified UTAUT model with TR inspired by Harris et al. (2018)

FIGURE 4 demonstrates a simplified model of UTAUT, which consists only of the constructs which had proven a significant positive correlation towards Behavioral Intention to Use technology in the study (Harris et al. 2018; Chauhan and Jaiswal 2016). The training reaction is a new construct to an existing UTAUT model proposed by Harris et al. (2018). Adding training reactions as construct advocates both studies by Marler et al. (2006) and Harris et al. (2018). Gender

construct is left out from the simplified model since, according to Harris et al. (2018), from a training point of view, gender is not a statistically significant factor and cannot moderate the relationship. The same goes for experience and age. Voluntariness of use is left out from the model since usually in an organization, the systems which require training and the organization have invested in training are mandatory for work. In this study, we examine the effects of the personalized learning plan implemented in end-user training; the voluntariness of use seems to be an irrelevant factor.

2.4 Self-regulated learning

"Self-regulated learning (or self-regulation) refers to the process whereby learners personally activate and sustain cognition, affects, and behaviors that are systematically oriented toward the attainment of learning goals" (Zimmerman and Schunk, 2011)

Schunk and Zinnermann (2012) write about controlled and autonomous regulation, and their results show that controlled regulation can lower the learning process and autonomous regulations improve learning. Learning is autonomous when interests and values are the keys for acting, and this is where Zimmerman and Schunk (2012) argue that the focus should be on. Students are said to enjoy the learning process when they are intrinsically motivated. Practical implications for boosting intrinsic motivation are, for example, defining the learning activities at a high level. In the case study where the user is learning to use a business intelligence system, these defined learning activities could be defining goals or defining a role for oneself, such as a low-level developer, regular user, or teacher within an organization. Schunk and Zimmerman (2012) write that autonomy can also be supported by the teacher by particular actions such as encouraging, asking about needs, and offering hints.

Defining values for the activity is crucial since individuals may feel potent for completing a given task but will not engage since they do not see value for them. The value of a task or activity to a student depends on four distinct categories: the nature of the task, needs, goals, and personal values of the student. (Eccles 1983; Wigfield & Eccles 1992) Schunk and Zimmerman (2012) argue that when students are autonomous in self-regulation, they see the task as interesting or important for them.

Zinnerman (1990) writes that learners are of two distinct categories; self-regulated learners and passive learners. Self-regulated learners are the type of learners who approach tasks with confidence and proactively seek information that might be blind-sighted from the teaching material. Self-regulated learners perform tasks such as goal-setting, self-monitoring, and self-assessment at various points during the learning process.

Zinnerman (1990) writes that several studies suggest that self-regulated learning strategies improve academic success. Self-regulated learning strategies

are listed below. These are together 14 different strategies as Self-evaluation, organization and transformation, goal-setting and planning, information seeking, record-keeping, self-monitoring, environmental structuring, giving self-consequences, rehearsing and memorizing, seeking social assistance, and reviewing. In Zinnerman's (1990) research, the most critical strategies for academic success arise strategies such as goal-setting and self-instruction, information seeking, self-monitoring, self-assessment, and note-taking.

Goal-setting is setting goals that the student aims to achieve. When the goal or goals are set, one usually commits behaviorally to a standard or an outcome. Zimmerman and Schunk (2011) describe goal-setting as one of the vital proactive sources of academic self-regulation. Goals setting is one factor that promotes motivation, and it is essential to set practical goals. In learning to use IS system, goals can be: learning to use the system's basic operations, using the system in weekly work, or learning something new and passing information to colleagues every month.

Information-seeking is also described as help-seeking, which is essential in learning to seek or ask about the material that student has difficulties understanding. *Self-instruction*, for example, can be discriminative stimuli to guide behavior. More comprehensively, this can mean, for example, explaining to self what the task is and what do learner has to do or accomplish. *Note-taking* is the process where learners write essential aspects down and construct meaningful paraphrases. Note-taking is intended for integration and adding information *Focus* as one of the aspects of self-regulated learning is the ability to keep interested in the subject being studied. It relates heavily to the perceived value of the subject. *Self-assessment* is the process of learner or student to judge own work or learning, and this can be, for example, grading own work or analyze about how well they have reached the goals if there are goals set for a specific activity or task (Schunk and Zimmerman, 2012, p 63).

Socially shared regulation of learning is one aspect of self-regulated learning. Hardwin, Järvelä, and Miller (2011) write about Socially shared regulation of learning (SSRL), an independent or shared regulatory process. This kind of shared regulation occurs in collaborative tasks where the attendees aim for the same outcome, for example, learning the same IS system. In SSRL, the effective goal is to gather students who would use self-regulatory strategies such as monitoring, evaluation, goals setting, and planning and synthesize these outcomes. SSRL promotes the possibility for online group meetings for goal-setting, monitoring, sharing beliefs, and synthesizing strategies. Sociocultural explanations frame SRL research (Vygotsky, 1978); interacting socially with more capable students in SRL facilitates SRL development and internalizes the modelled cognitive process. This research's premise is that SRL is an internal process, assisted and influenced by social interaction (Zimmerman, 1990; Panadero and Järvelä, 2015). In recent years, the concept of (SSRL) has emerged when groups regulate together as a collective, such as constructing shared task perceptions or shared goals. When groups co-construct plans or align monitoring perceptions to

establish a shared evaluation of progress, they are engaged in shared regulation (Järvelä, Järvenoja, Malmberg, and Hadwin, 2013).

SSRL involves the same interdependent or collectively shared regulatory processes, beliefs, and knowledge inspired by SRL research: strategies, monitoring, evaluation, goal setting, motivation, metacognitive decision making) to form a co-constructed or shared outcome (Winne, Hadwin, and Perry, 2013).
When people work or learn together, co-constructed and shared representations, shared goals, and shared strategies are developed. It also means regulating learning through shared metacognitive monitoring and control of motivation, cognition, and behavior.

In learning, there are a few actions listed for the teacher to encourage and promote SSRL. Teachers should promote working groups to have share responsibility for their actions and equal power relationships. Teachers should promote opportunities for the groups to plan, monitor, and evaluate their work. Teachers should point out that the group processes are also part of the activity. (Winne, Hadwin, and Perry, 2013). Self-regulation is described as a cyclical process by Zimmerman (2000). FIGURE 5 there is presented the cyclical process of self-regulation.

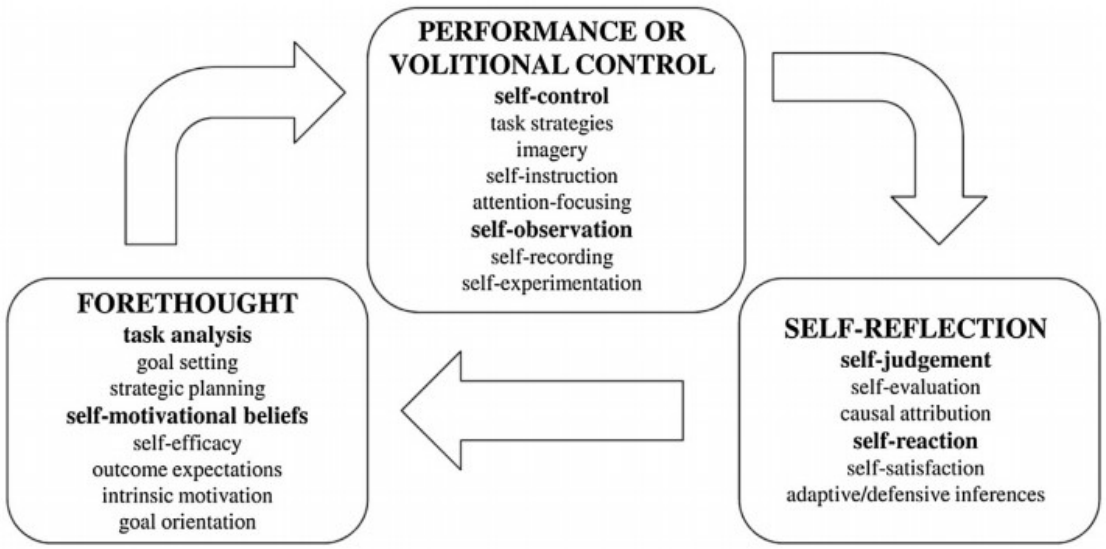

FIGURE 5 Process-model of self-regulated learning (Zimmerman, 2000)

Summary of self-regulated learning. Self-regulated learning involves three features such as students' use of self-regulated learning strategies, responsiveness to self-oriented feedback about self-effectiveness, and independent motivational process (Zimmerman, 1990). Dörrenböcher and Perels (2016) concluded a study to analyze content-independent SLR training, learning diary, and their combination. The Zimmermans model (FIGURE 5) consists of many trainable parts via instructions. To promote these SRL processes through SSRL, a facilitated group workshop could be the key to combining SRL training with a learning diary.

Dörrenböcher and Perels (2016) model has been used as a theoretical basis for many intervention studies and is also used in their study. Dörrenböcher and Perels (2016) found out that SLR training positively impacts the attendee's perception of SLR. The training consisted of all three phases, forethought, performance, and self-reflection (FIGURE 5).

According to Zinnermann (1990), self-regulated learning strategies increase the motivation and learning of the student. Leoledchai, Land, and Low (2008) found that adequate training occurs when trainees can use their knowledge and skill to apply the know-how to use after the training. Also, Grublješič and Jaklič (2015) researched the adoption of business intelligence systems. They wrote that organizations had user training for system use, which provided significant help for users to become familiar with the system. However, the training did not have an exact encouraging effect on using the system. They made a notice that the organization they observed, the use of the system was stronger right after training, and later on, the system was only used by those who saw the benefits. Gravil and Compeau (2008) suggest that programs support various self-regulated learning strategies. Such a strategy is mentioned as skill assessment.

3 Research model: The personalized learning plan

This chapter describes the object of the study, the personalized learning plan, in detail. The chapter describes how the personalized learning plan relates to existing literature and supports the hypothesis. The body of the personalized learning plan is gone through in detail and how it was used in this study. This study shows how to implement the personalized learning plan into end-user training, and furthermore, aims to prove that a new concept of the personalized learning plan (PLP) positively affects end-user training (EUT) outcomes and goals and therefore promotes the behavioral intention to use a simplified UTAUT model (PICTURE 4) model suggest. The end-user training goals have been determined in end-user training literature (Andersson et al., 1994; Bloom, 1984; Mahapatra et al., 2005; Grupta et al., 2010). These goals are the measurement points of study that evaluate the effects of the personalized learning plan.

- Skill-based goals
    - using the system
    - knowing meaning in the target system
- Cognitive goals
    - applying the tool and functionalities to business process
- Affective goals
    - motivational knowledge
    - satisfaction with the training
    - perceived anxiety
- Meta-cognitive goals
    - individuals' knowledge regarding learning and information processing process

Furthermore, the study tries to prove that using the personalized learning plan results an improvement in these four categories mentioned in training goals by Andersson et al. (1994), Bloom (1984), Mahapatra et al. (2005), and Grupta et al. (2010) which according to the theoretical model should contribute towards behavioral intention to use and use behavior (Harris er al. 2018). In the study, we collect and compare results from two groups that both attended the same EUT for a Business Intelligence system in the University of Jyväskylä. The target group also attended two workshops where the attendees made personalized learning plans. In addition to the questionnaire, some workshop attendees will be interviewed to understand better the workshops' outcomes and how attendees saw the personalized learning plan. FIGURE 6 shows the theoretical model of the study. The key points measured in the study are end-user training goals. In this study, the personalized learning plan is implemented into End User Training which was held in the University of Jyväskylä as part of the new BI system implementation.

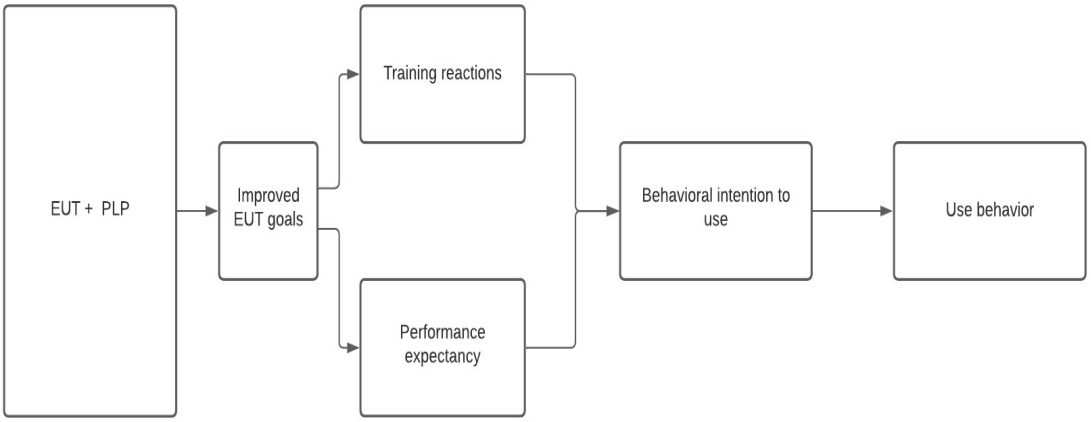

FIGURE 6 Theoretical model for EUT enriched with the personalized learning plan effectiveness to behavioral intention to use.

FIGURE 6 presents a theoretical model for end-user training combined with the personalized learning plan. The model was constructed from the end-user training and UTAUT literature. This model considers the end-user training goals and simplified UTAUT model inspired by Harris et al. (2018). With questionnaires and semi-structured interviews, the study tries to determine if the personalized learning plan implemented in end-user training results in improved end-user training goals and could affect behavioral intention to use through training reactions and performance expectancy, as Harris et al. (2018) suggest. What it comes to training, Harris refers to his study as follows; "Based on this study, it appears the result of training goes beyond simply learning something, it impacts the behavioral intention to adopt a new technology." – (Harris et al., 2018, p.232)

This study is executed together as a case study with JYU's new business intelligence system implementation. The implementation contains end-user training, which the staff of JYU will hold. The research question is approached by a case study. The workshops facilitating the personalized learning plan were held in video calls through the Zoom app. These workshops were voluntary for the staff of the University of Jyväskylä, who participated in the EUT for the new BI system.

The personalized learning plan will be implemented to end-user training by two additional workshops, which the researcher will hold separately from the actual end-user training.

3.1 The Personal learning plan in the context of the study

In order to aid the learning and promote self-regulated learning, attendees will conclude the personalized learning plan. The personalized learning plan is derived from Zimmerman's (2000) process model of self-regulated learning FIGURE 5.

The personal learning plan has a ready-made structure that promotes vital strategic aspects of SRL and SSRL theory, such as task analysis, goals setting, strategic planning, self-motivational beliefs, outcome expectations, and intrinsic motivation. (Schunk and Zimmerman, 2012, p 63). In addition, individual learning diaries are used to stimulate self-monitoring and are also used successfully in Dörrenböcher and Perels study (2016).

The researcher has formed the personalized learning plan that acts as a subject for this study to improve the results for BI system training goals. The personalized learning plan is a set of planned headers that the attendees will write down fill with their answers beneath each header. The ready-made structure of the personal learning plan goes as follows. It has five headings:

My way to learn

How do I use the system in work?

How does the use of the system make my work easier?

My learning objectives?

Where do I get additional information?

Making of the personal learning plan is divided into two parts. These parts are pre-learning activities and post-learning activities. Pre-learning activities occur before the reporting system's actual end-user training, and post-learning activities occur about two weeks after the end-user training.

Pre-learning activities tend to prepare the attendees for upcoming end-user training. Post-learning activities are to conclude the learning into meaningful information and reflect the outcomes. Participants of the enhanced EUT write each their learning diary estimated length of one to two pages. The diary is constructed in two phases, pre-phase and post-phase. The diary consists of key points from the SLR and SSLR theory: learning targets and goals, focus, tasks, information, help-seeking, which will be assessed in the pre-phase. The post-training phase is to evaluate the learning and self-assess with the help of the personalized learning plan.

The personalized learning plans' actual making will be facilitated through two workshops. These workshops are called personalized learning plan workshops. The structure of the workshops is described later on in this study.

3.1.1 Pre Learning activities

My way to learn:
Attendees will write down and memorize specific learning strategies and what suits them best. Then they will write down how they will apply these strategies in EUT training.

How do I use the reporting system at work?:
Attendees should have basic information about the reporting system they will start using and what it is intended for or will replace. Attendees will think about how they used the previous reporting methods. Based on this, they will write down how they see this new reporting system in their daily work or what for do they need it.

How does the new reporting system make my work easier?:
Attendees will write down how they compare this new system to previous reporting methods and how this will make their work easier? They are also spurred to think of new ways to benefit from this new reporting system.

Learning objectives:
Based on what they know about the system and upcoming training, attendees will write down their goals according to the reporting system's use.

Where do I get additional information:
When learning a new system, it is good to know where to find information. Attendees will write down sources for information about the system they use. It can be, for example, a colleague, google, or training materials.

3.1.2 Post-learning activities:

Accomplished goals
Attendees will write down accomplished learning objectives based on the previous objectives and manage to use the system in the way they had planned.

Unaccomplished goals
Related to accomplished goals, attendees will think of any goal they had that they could not accomplish.

Inhibitory factors
Related to unaccomplished goals, attendees will think and write down any inhibitory factor that prevented them from accomplishing the goal.

New goals
Attendees will now write down new goals related to the reporting system's use and learning of its functions. These can also be the same goals they had written down and did not accomplish.

How to accomplish the goals
Based on what the attendees have learned from the end-user training and what they know already about the system's use, they will think of the ways to accomplish these new goals.

3.2 Personalized learning plan workshop structure

In this study, we call this facilitated group meeting a workshop. This workshop aims to facilitate the forming of the personalized learning plan. In this case study, the researcher holds these workshops, but workshops could be held by the trainer responsible for the end-user training. However, the facilitator of the workshops should have relevant knowledge of the target system.

In the case study, the two workshops are a part of the system end-user training program to execute Microsoft Power BI and automated reporting for the University of Jyväskylä. This new model adds two extra workshops to regular training sessions compared to a regular system end-user training. The personalized learning plan is implemented into the EUT process model with two additional phases. The whole process forms out of three parts: the pre-training phase, training which is the actual end-user training, and the post-training phase. This three-phased structure for the enhanced EUT is inspired by Zimmerman's (2000) SLR process (FIGURE 5) and is visualized later in FIGURE 7.

Persons who attend enhanced system user training will attend the week before actual training in the pre-training phase workshop. After the workshop, the actual end-user training is held. After two to three weeks, the pre-training phase workshop is held. The whole enhanced end-user training is three to four weeks, where the attendees have a pre-training workshop, the training, and the post-training workshop.

In the case study, both pre-training and post-training are approximately one and a half hour long online sessions organized in online communication and facilitating platforms. Online communication is held in Zoom, an online communication platform for group communication. Mural, an online virtual whiteboard where participants can write and draw in time, is the platform for facilitating meetings. The actual training part is organized as regular end-user training in the classroom or an online class environment; this is the same for every EUT attendee, whether the person takes part in workshops or not.
The person facilitating the pre-training and post-training sessions is an expert trainer for the system taught in the end-user training. This person can guide the direction and the learning targets to match the desired outcome relevant to the system being taught.

The pre-training phase is organized as a group meeting despite its goals to achieve the personalized learning plan to promote self-regulated learning. The aspect of group meetings promotes SSLR theory. When self-regulated learning occurs in a group, it is called shared self-regulated learning. In this case study, we can benefit from SSRL since the group attending the EUT have the same employer, and participants are all aiming to learn the same system with the same functionalities and outcomes.

3.2.1 Personalized learning plan pre-training workshop

This consists of a detailed structure of a pre-training phase in the case study, the workshop and its parts with a scientific background, and how the parts and activities relate to self-regulated learning and shared self-regulated learning. The pre-training phase is a group meeting held online. Attendees of the meeting are participants in end-user training for the new business intelligence system. The pre-training phase is only in order for the attendees to conclude their personal learning plans for the actual training and does not include the end-user training material for the target system. The pre-training session lasts for one hour, and in this time window, the attendees will set learning targets, think and share ideas and write down the personalized learning plan inspired by SLR and SSLR theory.

The schedule of the actual meeting goes in the following order:

Introduction 15 minutes:
The one facilitating the session introduces the pre-training idea and steps that the group will accomplish during the session. After this, everybody introduces with a few words.

Self-reflection 15 minutes:
The attendees will write down learning goals; these goals can be written down in French quotes. For example, learning goals can be such as learning to extract new information from the system, learning to develop new content, learn to use the system effortlessly. The attendees will also think and write down the key points of value that this new system will or might bring for them or how this might benefit their work. The structured headings will act as a base for self-reflection.

Pair reflection 10 minutes
The attendees now discuss the targets they wrote down with a partner and the key points they see bring value and or might benefit their work. They will choose the two most essential learning targets and values together. These targets and values they will share with the group after.

Group reflection 15 minutes
Each pair who did the previous pair reflection will now write down to a canvas the goals and values they chose to be the most important. With the trainer's

guidance, these values and goals will be analyzed and reflected on how they relate to the target system and their work. Each will add more goals and values for their own learning plan if they see something that suits them personally.

Ending of the session 5 minutes
Every attendee will add information to their memo about where they can get additional information if needed at some point of learning or during the end-user training period. In the end, the trainer will conclude the session with a few words and what the attendees now have as an outcome.

3.2.2 Training phase

The training phase is the actual end-user training that focuses on teaching the user to use the system and develop a good picture of its functionalities. The training phase before the post-phase includes the time after the core EUT when the user is using the system

Depending on the organization, the EUT training differs, and this has no specific length. However, the training phase altogether included the core EUT, and the use of the system afterward should be about one to two weeklong period where the system is being actively used.

The participants attending EUT who have attended pre-training sessions now have a personalized learning plan notebook. In the pre-training phase, participants are instructed to use strategies mentioned in performance or volitional control of the Process-model of self-regulated learning (Zimmerman, 2000). These strategies are self-control, self-instruction, self-observation. Also, strategies such as note-taking and information-seeking are included here.

In practice, these strategies are writing down memos during the training and after, paying attention to the subject being taught, making clear to self what the subject is and what one needs to do to complete it, figuring out if the subject is tangible and understandable, and finding out the missing information in order to learn the concept as a whole.

3.2.3 Personalized learning plan post-training workshop

Introduction 10 minutes
The one facilitating the session introduces the post-training idea and steps the group will accomplish during the session.

Self-reflection 15 minutes
The personalized learning plan that attendees wrote in the pre-training session is reflected. Attendees will check the goals set earlier and analyze which were achieved and which were not. In addition to goals set earlier, attendees will write down also new goals for the future or highlight the unattained goals to attain in the future.

Pair reflection 15 minutes
The attendees will discuss with a colleague in pairs of two about the goals they achieved and which they did not. They are advised to figure out why they did not achieve the goals and if there were any barriers to achieving the goals.

Group reflection 20 minutes
Each pair will now write down on a Mural e-whiteboard for every attendee to see their findings of new goals, the goals they achieved, goals that were not achieved, and the possible reasons why they were not achieved. By the facilitator's guidance, results will be analyzed and what were prohibiting reasons for achieving the goals about the system use. Also, attendees are instructed to fill out the personalized learning plan if they find intriguing new goals.

End of the session 5 minutes
Attendees are instructed to use the learning plan and hold on to their goals.

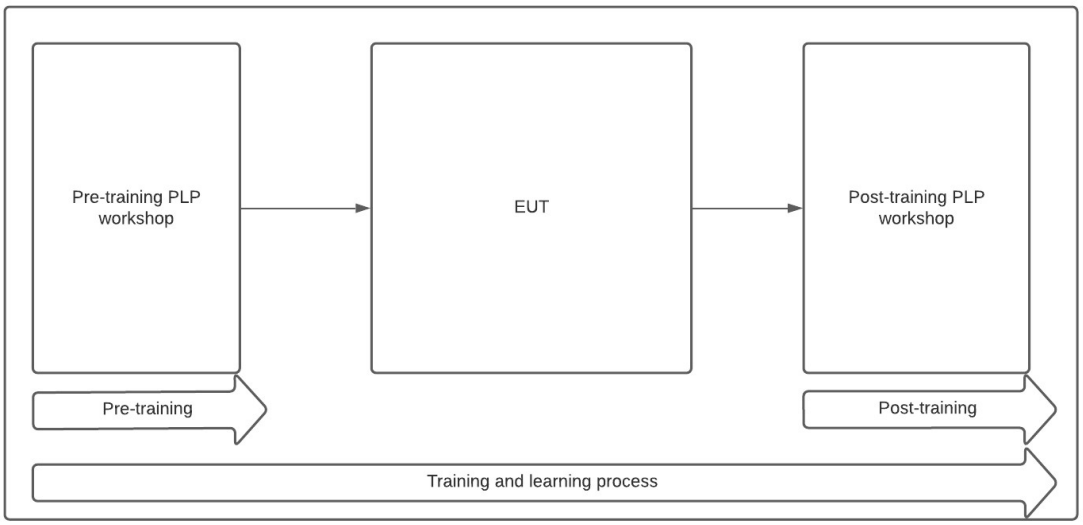

FIGURE 7 Framework for the execution of the Personalized learning plan

FIGURE 7 describes the framework for concluding the personalized learning plan. The framework has gotten inspiration from Gupta's (2010) model describing end-user training literature.

3.3 Summary

The concept of the personalized learning plan does not consider the content of the core EUT; this merely tries to add improvement to the EUT process where students use personalized learning plans to enhance the learning outcomes by concluding the personalized learning plans to support self-regulated learning. We are adding two workshops to be part of the core end-user training. This study describes the process as the personalized learning plan for end-user training.

The research studies the effects of the personalized learning plan added to the end-user training. According to SLR and SSLR research (Zimmerman and Schunk, 2011; Järvelä, Järvenoja, Malmberg, and Hadwin, 2013; Winne, Hadwin, and Perry, 2013) controlled and promoted SLR and SSLR contribute to students' results taking part in end-user training. This study suggests that people who attend end-user training combined with the personalized learning plan could have higher adaptation levels to new IS systems. Based on the theoretical model FIGURE 7.

SLR and SSLR theory structures have been implemented in the pre-training phase, such as goal setting, note-taking, and information seeking. Also, defining the values for the task is perceived as a crucial point for promoting autonomous self-regulation. After the pre-training, each attendant now has a personal learning plan written down.

The procedure follows (FIGURE 5) process model of personalized learning by Zimmermann (2000). With phases pre-training as the forethought phase. The actual training is the performance and volitional control, and the post-training is the self-reflection phase.

4 Research design

In this chapter, the context of the study and the research methods used in the study are described. In addition to that, this chapter describes data collecting methods, how the data was analyzed, barriers that affect the study's outcomes, and what kind of method was used to get the results.

4.1 Context of the study

The data collected for the study comes from the attendees of the end-user training for the Power BI business intelligence system and the specific report made for the end-user training participants. The attendees are employees of the University of Jyväskylä. They will start using a new automated reporting system to view and analyze the data which they previously used to extract manually in excel or with the predecessor of Power BI. The idea of end-user training is to teach an individual to use the reports independently and to search for information regarding the use of the reports. The training will prepare participants for more detailed use of the report, possibly develop the reports further and find and suggest improvements for the reports. Participants attending additional two workshops that facilitate the actual personalized learning plan are the target this study is interested in. The other group that only attends the EUT is the control group.

The data analyzed in this study comes from all of the participants who attended the end-user training and are willing to fill out voluntary questionnaires. The participants will fill out a questionnaire where they rate their perceptions of the use of the system and how they learned to use the system, how they are using the system now, and how they will see the system used in the future. The results are compared between the group that attended a group workshop and made the personalized learning plan and the control group that attended only the end-user training. Participants from the group that made the personalized learning plan will be interviewed to get more profound knowledge of the effects of the personalized learning plan.

People attending the survey are or were employees of the University of Jyväskylä at the time of the end-user training. People were informed about the study and the workshops by email, and it was voluntary to participate in the two additional workshops where the personalized learning plan was concluded. Since the attendees might or might not know about the target system of the end-user training, they have all been informed with a letter which has a description of the target system, what it is for, the system's main features, and where they can get additional information. This letter has been sent so attendees can set specific learning targets and focus on what and why something needs to be learned.

This information is sent to every attendee, whether they are in the control group or the group attending the improved end-user training.

4.2 Data collection

The collection of the data was arranged by Webpropoll survey tool. Participants of the end-user training were asked voluntarily to fill out the questionnaire whether they took part in the personalized learning plan workshops or not. In the questionnaire, participants could be recognized whether they attended the workshops or did not. Out of the participants for EUT, 30 people filled the survey, and out of 30 people, five took part in the personalized learning plan workshops; thus, they were in the target group.

The survey had demographic questions about an attendee's age, the profession's status, how technology-oriented they are, what kind of technology adopters they are, and how they responded to using the system and EUT. Also, open questions were aimed only at the target group, which concluded the personalized learning plan to better understand the personalized learning plan as a concept. In addition, two people from the target group were interviewed in semi-structured interviews. People from the target group who concluded the personalized learning plan were also asked to participate in a semi-structured interview.

The questionnaire has a quantitative part and open qualitative questions. Questions were measured in a 1 to 5 Likert chart. The questionnaire also had rating questions from 1 to 10 to derive experienced benefits of the personalized learning plan from the target group. The study has a focus on open questions directed only on the target group and data gathered from interviews due to the small number of participants in the target group.

4.3 Participatory research

The study was executed as participatory research. The study itself would be survey research, but for researcher involvement in the processes, the study is viewed as participatory research. For example, the researcher made the subject of the study, personalized learning plan design. Also, the workshops which facilitated the personalized learning plan were held by the researcher.

The fact that the researcher is attending the study might affect the results, and it has to be considered. First, although the personalized learning plan methods are presented in detail, each person facilitating and guiding the workshops might do it differently. Secondly, since facilitating workshops for the personalized learning plan is an interaction between facilitator and students, the facilitator's public speaking and overall communication skills play a crucial role. Third, even though the facilitator does not need to be an expert in the system that end-

user training is targeting, it comes out in handy. In this study, the researcher conducting the study and facilitating the workshops is an expert trainer for the system and thus could provide participants with specific aspects for the learning plan. For this reason, it is recommended that the facilitator for the personalized learning plan workshops does have expertise on the system the end-user training is targeting or is the same person holding the end-user training. Yet the role of the teacher or facilitator cannot be ignored based on the argument made by learners autonomy can be supported by certain actions such as encouraging (Schunk and Zimmermann, 2012).

Data was collected surveying the participants of the end-user training. Two groups were separated from the data. The target group attended both the personalized learning plan workshops and end-user training, and the control group attended only the end-user training. For analyzing the data, this study adopts fixed methods of both quantitative and qualitative design. With quantitative methods, measures such as satisfaction towards the system or training and qualitative methods are applied to understand better how participants felt about the Personalized Learning Plan. First, the quantitative results are analyzed with the Mann-Withney U-test to see scientifically significant differences between test and control groups. Finally, the latest to extract qualitative data from the test group uses Qualitative thematic analysis.

According to Nachar, 2008 Mann-Whitney U-test is suitable for small samples, and normal distribution cannot be confirmed. Thus it is often used for psychological studies. In such cases, parametric means for T-tests are not valid. The Mann-Whitney test is excellent for testing differences between two groups and is being used for small five to 20 participant studies. The Mann-Whitney test has less risk of giving significantly wrong results. (Nachar, 2008) The results of this questionnaire were analyzed with Webpropoll professional statistics software.

Thematic analysis is often used for recognizing patterns in data. However, Cruzes and Dyba (2011) describe that Qualitative thematic analysis can be used as a constructionist method for examining meanings and experiences of the subjects. Three approaches have been described by Cruzes and Dyba (2011), which are inductive, deductive, and integrated approaches. This study uses the integrated approach, which means the codes are created both by the inductive approach and the deductive approach. The inductive approach lets the data determine the codes, and the codes are generated as the concepts emerge. The deductive approach is made by collecting codes from the data. These codes can help integrate the data into the existing literature. Data must not be forced into categories just because the code exists, and this is mentioned as a thing to avoid by Cruzes and Dyba (2011).

5 Empirical findings

The results of empirical research and analysis are written in this chapter. In addition, the presentation of the data and how it is coded is shown in this chapter. Then the assumptions of how personalized learning plans affect the outcomes of end system training.

5.1 Overview

The Mann-Whitney U-test study compares the target and control groups to find out if the target group managed to improve their end-user training outcomes and goals by concluding the personalized learning plan. Yet the thematic analysis is made from the data in order to form empirical conclusions and primary empirical conclusions.

Inductive codes have been derived from the data—both open questions in the questionnaire and from semi-structured interviews. Deductive codes have been derived from the end-user training outcomes.

TABLE 1 Assigned codes and occurrences in the data

Deductive code	Inductive code	occurrence
Satisfaction with the training	Clear goals for training	2
Satisfaction with the training	Improved focus to actual training	4
Individuals' knowledge regarding learning and information processing process	Support from others	1
Individuals' knowledge regarding learning and information processing process	Knowing own skill level	1
Applying the tool and functionalities to business process	Reflecting the use of the system	1
Applying the tool and functionalities to business process	Reflecting own needs for the system	1

Deductive code	Inductive code	occurrence
Applying the tool and functionalities to business process	Broader perspective for use cases through group work	3
Applying the tool and functionalities to business process	Improved understanding of the system	1
Knowledge regarding own learning and information processing process	Reflect on own ways of learning	2
Motivational knowledge	Improved vision for the subject studied	2
Perceived anxiety	More positive approach towards the new system	2
Perceived anxiety	Decreased anxiety towards the system	1

The thematic analysis shows that satisfaction with the training had the most occurrences with the data with perceived anxiety and motivational knowledge; the contribution towards affective goals of end-user training was the most significant factor which data revealed. The second most occurrences had deductive code applying the tool and functionalities to the business process, indicating contributions towards cognitive goals. Contributions towards Skill-based goals did not emerge from the thematic analysis of the data.

5.2 Mann-Whitney U-test

The Mann-Whitney U-test is ideal for analyzing small data samples from five to twenty participants. Thus Mann-Whitney U-test is often used in psychological tests (Nachar, 2003). The test can be used to answer, for example, the question about differences between two groups. Mann-Whitney U-test is ideal in this case where the sample size is relatively small, and data is nonparametric. Because of the small sample size, the variables do not meet the distribution curve, and thus T-test would not be suitable for this test. Mann-Whitney U-test does not require data to fulfill the distribution curve.

The test and the control group's answers were compared with Mann-Whitney U-test in order to compare the groups and to see if the answers between these groups differ. The null hypothesis is that there is no difference between test and control groups. In order to make the conclusion that the two groups are significantly different thus, the null hypothesis is rejected value for p has to be lower than 0.05 ($p<0.05$).

In this case study, only one question showed a significant difference between the two groups with p=0.032. The groups were asked to evaluate if the new reporting system has increased their work productivity. Target groups scored more positive or neutral answers here, whereas control groups' answers were more pessimistic, indicating that they had not improved their work.

For the rest of the questions, the Mann-Whitney U-test did not reveal significant differences between the two groups; the data indicate a slightly more positive attitude towards intentions to use the new system and the perceived benefits. Questions regarding the use of the system and personal skills to use it did tell that participants generally did not have time to use the system from their other work. The demographic questions did not produce any additional data that would be in this survey's interest.

FIGURE 8 presents the results of the questionnaire. In the graphs, the average of both groups is presented with the number of answers. Although the Mann-Whitney U-test resulted in only a slight difference between the target and control groups, the graph presents interestingly higher answers with questions that handle the perceived willingness to use the system and perceived benefits. This might indicate the attitude towards the system.

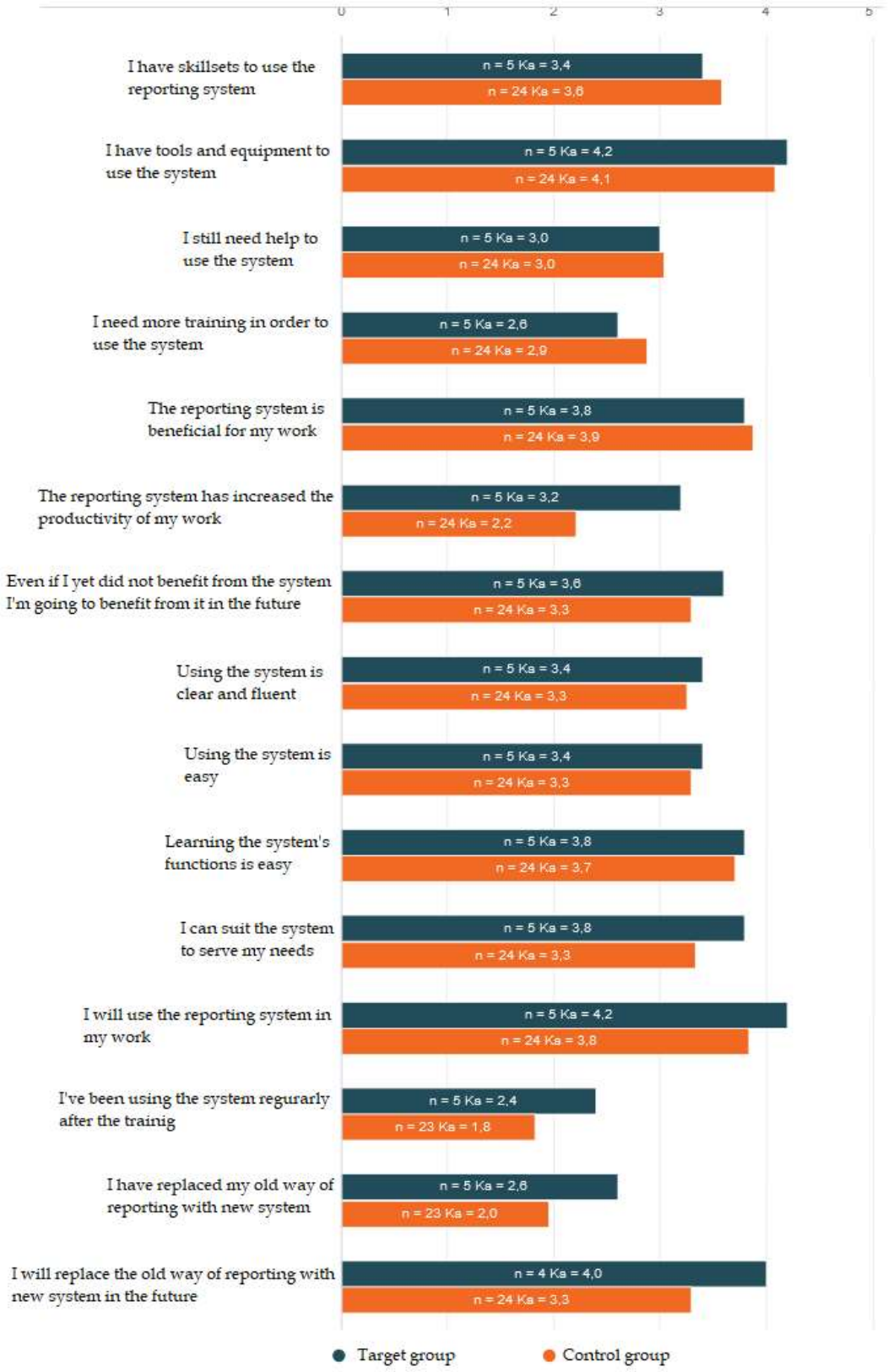

FIGURE 8 Graph of the results of the questionnaire

PEC1: The data did not reveal any significant statistical difference regarding end-user training outcomes between the target and test groups. However, a slightly more positive attitude towards intention to use and perceived benefits was present with the target group.

5.3 Skill-based goals

Skill-based goals are mentioned as one of the training outcomes by EUT literature. Skill-based goals refer to the user's skills using the target system, knowing the right tools and commands, and their meaning in the target system. When participants were asked about the skills and system usage, half of the participants answered that they had not used the system between training and questionnaire because there was no need yet. The other half did not have time to use the system from other work.

The study does not show that skill-based goals would differ between the control and target groups. I would suggest that the main reason for results is the system's shorthanded usage time, and for that reason, participants can not evaluate their skills to use the target system. For example, 80% of the target group and 72% of the control group had used the target system under two times or none during one month after the training. Open questions revealed that the reason for not using the system was mainly lack of time or it was still missing the material person would need from the system.

PEC2: Data showed that users had insufficient time to evaluate skill-based goals

5.4 Cognitive goals

The cognitive goals as a training outcome refer to the mental awareness and judgment of the user. Cognitive goals are skills and knowledge to apply the tool and its functionalities to a business process. From data, the topic arose once from the target group. The personalized learning plan focused on finding the answer forehand on questions such as "*How do I use the system in my work?*" and "*How does the system make my work easier?*" attendees had an idea on what to pay attention to before the actual end-user training. When asked about the usefulness of the

personalized learning plan as a concept and how the respondents thought of it personally, several answers had similar topics. Respondents had thought about how to benefit from the system and how to apply it to their work.

> "The Personalized learning plan helped me to get ready for future use cases."

> "I have been thinking about the use cases."

The comments and uniformity of the topics where respondents of the target group think that they had reflections pointed towards future use cases suggest that the personalized learning plan has impacted cognitive goals training outcomes.

> EC1: Personalized learning plan directs participant's conceptions towards achieving cognitive goals of end-user training.

Three out of five persons mentioned group work and peer support as beneficial when making the personalized learning plan. In addition, other people facing the same new system had given new perspectives on using the system.

> "Other's opinions expanded my thoughts and reflections."

While working in a group, this hive-mind kind of collective intelligence seemingly supported reflecting the use cases and how to benefit from the system. This supports the theory of SSLR theory by Järvelä, Järvenoja, Malmberg, and Hadwin (2013).

> EC2: Collective thinking of the personalized learning plan topics helps participants get a broader vision of the use cases.

The personalized learning plan participants evaluated how significant the learning plan's effect on their learning usage of the system was. This evaluation was on a scale from one to ten average between all five participants was 6,4, which implies that the personalized learning plan had some positive effects on learning the system.

> EC3: Personalized learning plan is seen as a helping factor in learning and finding use cases by the participants of the personalized learning plan.

From the total of three empirical conclusions on the personalized learning plans effects towards cognitive goals, a primary empirical conclusion PEC1 was formed.

PEC3: Concluding a conceptualized personalized learning plan might give participants new ideas to reflect the system usage.

5.5 Affective goals

Affective goals are considered as the emotional thoughts and feelings towards to system and training of the user. These include motivational knowledge, which refers to users' opinions of the importance of the system and what the system can do for the organization. The second aspect of affective goals is perceived satisfaction with the training, and the last aspect is perceived anxiety.

The Personalized learning plan focuses on thinking and listing how one could benefit from the system, how one might use the system and how to improve working with the system. These aspects aim to increase the motivation towards the system when a participant of the end-user training already has considered these things.

> "When aspects such as how to use the system, how the system benefits you, and what do I need from the system had been considered in advance, I had a more positive attitude and urged to learn in end-user training."

When assessing the individual's needs for the system and how one might benefit from the system like the personalized learning plan guides participants to do, it seems to lead to higher motivational knowledge shared between participants of the workshops. From this, EC4 is formed.

> EC4: Making the personalized learning plan can lead to a more positive attitude towards the system and training.

Improved focus on the training arose four times from five different participants as an inductive and deductive code. Improved focus on training could be categorized as satisfaction with the training. Gupta (2010) implies that training is not solely to give participants skills and teach them but also to provide a high level of satisfaction. Training reactions between the target and the control group on a Likert chart did not seem to differ statistically. Both groups evaluated the training as s positive experience. The target group evaluated the usefulness of the personalized learning plan on a scale from one to ten on average 8,4, which implies the positive training reactions on top of the training to also to the personalized learning plan workshops.

> "Concluding the personalized learning plan got me to switch my mind into training mode."

Comments on how the target group attendee could switch mind into training mode could indicate a more positive attitude towards the training and, therefore, acts as a base for EC5.

> EC5: The personalized learning plan could lead to a more positive attitude towards learning the target system and also towards the end-user training.

Perceived anxiety is mentioned as one aspect of the affective goals of the end-user training, and it was not unmentioned in the data. Computer anxiety was significantly related to task performance and negatively related to learning computer skills (Heinssen, Glass and Knight, 1987). Thus it could be argued as a significant factor of this study that 2 out of 5 brought decreased anxiety towards using the system and towards end-user training. In this case, perceived anxiety was also related to cognitive goals as an improved system's vision and understanding of the purpose.

> "Making the personalized learning plan lowered the anxiety."

> "After getting a better understanding of the purpose of the system and how to use the system in my work, and learning these aspects, the anxiety to use the system was lower."

This implies that careful pre-assessing of the goals and needs for the system as attendees did in the personalized learning plan can lower the perceived anxiety of a new learned system, which leads to EC6.

> EC6: Pre-assessing the needs and purposes for the new system to be learned can decrease the perceived anxiety.

Decreased perceived anxiety was not solely targeted towards the system but also towards the end-user training, thus leading in an overall positive attitude towards the system. When attendees were asked how concluding the personalized learning plan affected their interest in the system and motivation to use it, a positive attitude and lower threshold to start using were mentioned.

> "Threshold to try the system reduced."

> "I had a positive attitude towards the system."

If the threshold to start using the system is lower, and the attitude towards the system is increased, one might argue that the implementation to personnel to use the system might go faster, and the new system will support the intended business process quicker.

EC7: Increased positive attitude towards the new system and lowered threshold to start using the system were present when concluding the personalized learning plan.

Affective goals played a significant role in the goals targeted and assessed by the personalized learning plan. The data brought many cases directly linked to affective goals, some of which could be reasoned under the affective goals of end-user training. The data did not raise statistical differences between the target and control groups, suggesting that the target group would have had better outcomes on effective goals than the control group. Still, the questionnaire and interview data revealed essential aspects, especially regarding attitude and perceived anxiety which were affected by the personalized learning plan. PEC4 is formed as follows.

PEC4: Concluding the personalized learning plan could facilitate one's implementation of the new system in a less stressful way and increase the chances of achieving the affective goals of end-user training.

5.6 Meta-cognitive goals

Meta-cognitive goals focus on students' self-reflection towards one's learning and information processing process. These could be actions and acknowledgments such as knowing what type of learning suits them best and knowing what level the attendee has learned something. Gupta (2010) also mentions variables such as self-efficiency and beliefs to perform a specific behavior. In the same study, it is said that especially self-efficiency affects other training goals and is a solid antecedent for post-training intention to use the system.

End-user training has a key intention to teach the skills for attendees to use the target system and prepare the attendees mentally to use the system. After assessing the learning goals and how one can benefit from the system, it is easier to see if one has the skillset to use the system.

"After assessing the own training goals, the need to attend second EUT realized."

When motivation to use the system is intact, and one can see the benefits, the right actions can be made to learn the system. This leads to EC8.

EC8: Assessing the training goals of the personalized learning plan after the training, an attendee of the end-user training can better evaluate skill level to use the system.

Attendees of the personalized learning plan workshops were asked how concluding the personalized learning plan affected their learning during the end-user training. This question provoked similar answers within the target group.

"I could point out the most crucial points to focus on."

"I was thinking the subjects we discussed during Personalized Study Workshops."

"I became more self-aware of what I was learning."

The target group evaluated 6,4 on a scale from one to ten how significantly concluding the personalized learning plan helped them learn the system during the end-user training, which implies a reasonable amount of help achieved by concluding the personalized learning plan.

Thus many attendees of the test group thought it was beneficial for the actual training to stop and think about the basic questions such as, what the system was about, how do I use the system, what do I need the system for, and shared that information with other group members, EC9 can be drawn.

EC9: Assessing the fundamental questions about the system usage and benefits for the user before end-user training can improve the attendee's focus on the training.

As Gupta argues in his study (2010), achieving meta-cognitive goals such as self-efficiency favors other end-user training goals. One could point out that knowing one's learning goals and trying to achieve them, in fact, is self-efficiency. Two empirical conclusions were formed under meta-cognitive goals, and thus primary empirical conclusion PEC 5 is suggested.

PEC5: The personalized learning plan can positively affect on meta-cognitive goals of end-user training by assessing the fundamental questions about what is being learned and what for.

5.7 Summary

This chapter presents the data analysis and outcomes of the three primary empirical conclusions. The primary empirical conclusions are formed from a total of nine empirical conclusions. The empirical conclusions are shown in TABLE 2.

TABLE 2 Empirical conclusions of the study

Identifier	Theme	Empirical conclusion
EC1	Cognitive goals	The personalized learning plan directs participants' conceptions towards achieving the cognitive goals of end-user training.
EC2	Cognitive goals	Collective thinking of the personalized learning plan topics helps participants get a broader vision of the use cases.
EC3	Cognitive goals	The personalized learning plan is seen as a helping factor in learning and finding use cases by the participants of the personalized learning plan.
EC4	Affective goals	Making the personalized learning plan can lead to a more positive attitude towards the system and training.
EC5	Affective goals	The personalized learning plan could lead to a more positive attitude towards learning the target system and also towards the end-user training.
EC6	Affective goals	Pre-assessing the needs and purposes for the new system to be learned can decrease the perceived anxiety.
EC7	Affective goals	Increased positive attitude towards the new system and lowered threshold to start using the system were present when concluding the personalized learning plan.
EC8	Meta-cognitive goals	Assessing the training goals of the personalized learning plan after the training, an attendee of the end-user training can better evaluate skill level to use the system.
EC9	Meta-cognitive goals	Assessing the fundamental questions about the system usage and benefits for the user before end-user training can improve the attendee's focus on the training.

The table below presents each primary empirical conclusion after the training outcome, examples from the literacy pointing to each training outcome, notions from the data related to training outcomes, and the last primary empirical

conclusion drawn from empirical conclusions. TABLE 3 presents the summary of the outcomes with literacy examples added with notions from the data, and matching PECs.

TABLE 3 Summary of the training outcomes infused with literacy examples, notions from the data, and PECs

Training outcome	Literacy examples (Gupta, 2010):	Notions from data	PEC
Combined training outcomes between target and contoc groups	Application knowledge, Know how, Tool Procedural, Motivation, Domain knowledge, Meta-Cognitive, Business procedural,	- Not enough time to use the system - The system lacks features and data needed - The target group has slightly more positive intention to use and perceived benefits	PEC1: The data did not reveal any significant statistical difference regarding end-user training outcomes between the target and test groups. However, a slightly more positive attitude towards intention to use and perceived benefits among the target group.
Skillbased goals	Application knowledge, Know how, Tool Procedural,	- Insufficient time to use the system	PEC2: Data showed that users had insufficient time to evaluate skill-based goals

Training outcome	Literacy examples (Gupta, 2010):	Notions from data	PEC
Cognitive goals	Business procedural, Domain knowledge, Know what and why, knowing the business context,	- Thinking about use cases - Shared information about the use cases	PEC3: Concluding a conceptualized personalized learning plan might give participants new ideas to reflect the system usage.
Affective goals	Motivation,	- Positive attitude - Lower anxiety - The lowe threshold to use the system	PEC4: Concluding the personalized learning plan could facilitate one's implementation of the new system in a less stressful way and increase the chances of achieving the affective goals of end-user training.
Meta-Cognitive goals	Meta-Cognitive	- Knowing own skill level - Improved focus on training - Knowing what has to be learned	PEC5: The personalized learning plan can positively affect on metacognitive goals of end-user training by assessing the fundamental questions about what is being learned and what for.

A total of five primary empirical conclusions are presented, which are derived from the data. These primary empirical conclusions point to each training outcome goal formed by Gupta (2010).

6 Discussion

This chapter presents the primary empirical conclusions presented in TABLE 4 and how each relates to the existing literature, forming the theoretical background for this study.

6.1 Practical implications

Skunk and Schimmermann (2012) wrote about how intrinsically motivated students enjoy the process of studying and how autonomous regulations improve learning. Autonomous means that interest and values are values for acting. PEC3 states that concluding the personalized learning plan might give students new ideas to reflect the system usage, which can act as an interest and value for the learner.

Reflecting PEC3 to end-user training outcomes listed by Gupta (2010), PEC3 responds to cognitive goals where outcomes are related to most knowledge, know what and why. For example, when attendees think about the use cases for the system and share information, they might understand the meaning of the system better and get new ideas. Thus the cognitive outcomes of the end-user training could be better met.

Perceived anxiety and resistance against new system implementations is described as one of the theories by Laumer and Eckhardt (2012). It relates to the theory described as Passive Resistance Misuse, which leading factors are fear and stress ricing up from intrusion of new technology disturbing previously stable world of the user. PEC4 states that a person concluding the personalized learning plan can reduce stress implementing the new system. This also provokes the affective goals of the end-user training listed by Gupta (2010), which relates to motivation. This study showed that a personalized learning plan could reduce perceived anxiety and thus make the new system implementation seemingly easier.

PEC5 states that concluding the personalized learning plan can affect metacognitive goals such as knowing own skill levels and knowing, what has to be learned still, and which areas to improve. Knowing what needs to be learned can positively affect learners' focus during the learning and ability to spot the key points related to the areas the student has identified that need to be learned. Assessing own skills and goals after learning can trigger the need to attend end-user training again, as the data suggested, or a person with good motivation can self-learn the skills needed for the system usage. Thus the personalized learning plan can be used to boost end-user training attendees' self-regulated learning.

PEC3, PEC4, and PEC5 imply that an organization implementing a new system and having end-user training should consider adding a personalized learning plan as part of the training, which could improve the end-user training

cognitive, affective, and meta-cognitive goals. The personalized learning plan can be implemented into end-user training as this study describes. TABLE 4 describes the practical implications.

TABLE 4 Practical implications

Primary empirical contribution	Implication for practice
PEC3, PEC4, PEC5	Companies and organizations implementing new systems should consider adding the personalized learning plan to their end-user training. The personalized learning plan can also be used by the organizations that sell systems and hold training related to these systems and as part of the internal training for new employees. Implementing could be done as this study shows.

6.2 Theoretical contributions

This study aimed to prove that the personalized learning plan concept as part of the end-user training was beneficial for the new system implementation. This was studied by achieving the end-user training goals. The data did not reveal a statistical difference between target and control groups. Instead of data gathered from test groups by questionnaire and interviews revealed exciting points about the personalized learning plan, which are formed as empirical conclusions and primary empirical conclusions. The empirical evidence is shown in relation to the existing literature in TABLE 5

TABLE 5 Theoretical contributions

Identifier	Primary empirical contribution	Relation to existing research
PEC1	PEC1: The data did not reveal any significant statistical difference regarding end-user training outcomes between the target and test groups. However, a slightly more positive attitude towards intention to use and perceived benefits among the target group.	No existing research was found supporting or contradicting PEC1.
PEC2	PEC2: Data showed that users had insufficient time to evaluate skill-based goals.	Corresponding, on Rangarajan, Jones, and Chin (2005) study where salespeople felt overburdened when implementing new SFA software.
PEC3	PEC3: Concluding the personalized learning plan might give participants new ideas to reflect the system usage.	Corresponding, Shared learning increased understanding at different levels. (Parsell, Spalding, and Bligh, 1998)
PEC4	PEC4: Concluding the personalized learning plan could facilitate one's implementation of the new system in a less stressful way and increase the chances of achieving the affective goals of end-user training.	Corresponding, Perceived stress towards technology can be reduced by offering training programs to understand features (Rangarajan, Jones, Chin, 2005)
PEC5	PEC5: Concluding the personalized learning plan can positively affect on metacognitive goals of end-user training by assessing the fundamental questions about what is being learned and what for.	Corresponding, Meta-cognition is a broad construct encompassing all aspect's of trainee's cognitive self-regulation; which enhance learning by breaking the task down into its essential components and meaningfully reorganizing the parts (Sitzmann and Ely, 2011)

The data did not reveal any significant statistical difference regarding end-user training outcomes between the target and test groups. However, a slightly more positive attitude towards intention to use and perceived benefits among the target group (PEC1), which indicate a change of SLR and SSLR theories, supported personalized learning plans to affect attendees' perceptions regarding the intentions to use and perceived usefulness. These findings indicate that the personalized learning plan has affected the affective goals of end-user training.

Data showed that users had insufficient time to evaluate skill-based goals (PEC2). Attendees of the end-user training from both target and test groups said there was no time to leave other work to use or test the new system. This might imply that the system is not business critical and that staff who are supposed to use it can still manage their work other ways. One factor can also be the additional burden that comes from implementing the new technology, as Rangarajan, Jones, and Chin (2005) find in their study. Nevertheless, this factor could be resolved with a more extended time period between the questionnaire and the end-user training. Due to this, the study did not have sufficient data for analyzing the skill-based goals of the end-user training.

PEC3: Concluding the personalized learning plan might give participants new ideas to reflect the system usage. The effects came up through SSLR theories and other shared learning theories that support this. (Parsell, Spalding, and Bligh, 1998; Järvelä, Järvenoja, Malmberg, and Hadwin, 2013) Nevertheless, this finding supports contributions towards technology acceptance. Simplified technology acceptance model FIGURE 4 as performance expectancy was rated as a significant factor regarding the behavioral intention to use by Harris et al. (2018). Having new ideas to reflect the system user might better understand how the system will perform and thus affect behavioral intention to use.

Concluding the personalized learning plan could facilitate one's implementation of the new system in a less stressful way and increase the chances of achieving the affective goals of end-user training (PEC4). This perceived stress relief could manifest itself by better understanding the system's functionalities and purposes. Rangarajan, Jones, Chin (2005) writes that stress thrives from complex systems in which users do not have time to learn or they do not see learning as necessary, although it is mandatory, which was advised to be dealt with training. Conclusion the fact that users can understand better why they are learning is why concluding the personalized learning plan together with end-user training might give advantages by relieving perceived stress and anxiety towards new system implementations. Attitude towards the system also plays a crucial role in implementing a new information system and the resistance against the new system. (Laumer and Eckhardt 2012). By increasing the positive attitude towards new information systems, we could decrease the resistance the new system might receive from users. The increased positive attitude towards the system was mentioned in the data.

Concluding the personalized learning plan can positively affect on metacognitive goals of end-user training by assessing the fundamental questions about what is being learned and what for (PEC5). Attendees who concluded the

personalized learning plan described an increase in meta-cognitive learning areas by assessing what is being learned and what for. By assessing their own learning and writing down the goals for the training, attendees are implementing self-regulated learning methods, which act as a foundation for the personalized learning plan. This way, the attendees also can observe if they have reached the goals they set and take actions towards achieving them. The fact that Sitzmann and Ely (2011) suggest in their study that as organizational training shifts away from instructor-driven classroom learning, self-regulatory processes should be taken into consideration in informal learning. This is the crucial element of what the personalized learning plan tries to promote.

As the personalized learning plan promotes self-regulated learning strategies, a study by Gravil and Compeau (2008) also shows that self-regulated learning strategies positively influence learning outcomes.

7 Conclusion

In this chapter, the conclusions of the study are presented. The conclusions answer the research question, considering the study's limitations and suggestions for future research opportunities.

7.1 Research question

This study strives to determine how the IS end-system user training outcomes could be improved. In order to find out this, the study tries to answer the following research questions:

> How to use the personalized learning plan as part of end-user training.

The study approaches this question as a case study where the JYU implemented a new business intelligence system for their staff. The study answers the question by presenting the personalized learning plan model and its implementation in the case study. The theoretical background supports the assumed benefits of the personalized learning plan. Further on, the study shows the detailed structure of concluding the personalized learning plan and the structure to facilitate the personalized learning plan together with IS end-user training.

The study explains the effects of the personalized learning plan merged with end-user training on the end-user training goals. From the main research question, two sub-questions are derived.

> How does the personalized learning plan affect the goals of end-user training?
>
> What areas of the end-user training goals does the personalized learning plan support?

The answer to the question starts by searching for ways to measure the outcomes of the end-user training from existing literature. From these measures, the theoretical model for end-user training outcomes was constructed. Data from the interviews and questionnaire was extracted with deductive thematic analysis, and from this data, the primary empirical contributions were made. Finally, the data was concluded around themes that the model determined. PEC's three, four, and

five answers The first sub-question: How does the personalized learning plan affect the goals of the end-user training.

Data in TABLE 2 reveals the answer for the second sub-question. The areas which mainly rose from the data were cognitive goals, affective goals, and meta-cognitive goals. The study suggests that the personalized learning plan might positively affect end-user training outcomes. The findings focus mainly on end-user training's cognitive, affective, and meta-cognitive goals. As the theoretical model FIGURE 7 of the study suggests, this also can affect behavioral intention to use. In addition, the study did not find a significant difference between target and control groups, indicating that the personalized learning plan had significant effects on the learning outcomes. Overall the personalized learning plan had good feedback from the attendees, and even if it can slightly improve the adaptation of the new software, it is worth the effort.

Out of the research scope, participants attending the personalized learning plan workshops also saw how the new system limits their possibilities to benefit from the system or use it in their work and how it should be developed further to overcome these limitations. This was seen as a good way of testing and making a list of features to develop in the system.

7.2 Limitations

The small number of participants to the personalized learning plan workshops was probably the most significant factor limiting the survey. The five people who attended the survey faced the same problem with every other people attending the end-user training, which was the lack of time to use the system. This resulted in insufficient data regarding the learning outcomes on skill-based goals. This could have been tackled by extending the period between end-user training and the questionnaire. Although expending the time between questionnaires could have affected the questions relating to the actual training and the personalized learning plan. The best result probably would be if the questionnaire was in two parts and the latter was about the system usage and skill-based goals.

The data was collected only from one organization dealing with one type of system. In order to get more profound results, the study should be made in multiple companies dealing with new IS implementation.

The fact that the researcher was also responsible for holding and organizing the personalized learning plan workshops can have limiting effects on this study. Based on the instructions person who has not planned and created the concept for the personalized learning plan could have different results. For example, the results can vary based on the chemistry between the participants and the facilitator. This also promotes the possibility to conclude the study in multiple organizations with different facilitators and different systems.

7.3 Future research opportunities

Future research opportunities could focus on yet improving the end-user training. Harris et al. (2018) suggest that instructional design prescriptions should be developed to create an end-user training program that significantly impacts technology acceptance. This was also one of the inspirations for this study. However, nothing is perfect and could not be developed further. The literature lacks tangible examples of IS end-user training cases where the system is taught mostly or only through an online environment. In such cases, it would be interesting to find out what factors boost learning and what are the deteriorating factors for learning.

Another interesting topic would be approaching the implementation process from the beginning, even before the actual purchase, by concluding the personalized learning plan and a light end-user training. The reason for this is due to the realized information on how the actual users need the system to function in their work. During this study, the topic that emerged among the target and control group was that the system does not have the functions needed just yet and needs further development in order to be practical. The ideas about the usage and functions that emerge during the personalized learning plan end end-user training could be used for system development and integration purposes. When the knowledge of how the system has to function to suit the purpose and play along the business processes could be extracted early stages of the purchase or integration process from the actual users. It could profoundly affect how well an extensive system such as ERP could be implemented or sort out the best candidate among the offerers.

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APPENDIX 1 LIST OF QUESTIONS OR PROPOSITIONS USED FOR THE DATA COLLECTION

- I have the skillsets to use the reporting system
- I have tools and equipment to use the system.
- I still need help to use the system.
- I need more training in order to use the system.
- The reporting system is beneficial for my work.
- The reporting system has increased the productivity of my work.
- Even if I yet did not benefit from the system, I'm going to benefit from it in the future.
- Using the system is clear and fluent.
- Using the system is easy.
- Learning the system's functions is easy.
- I can suit the system to serve my needs.
- I will use the reporting system in my work.
- I've been using the system regularly after the training.
- I have replaced my old way of reporting with the new system.
- I will replace the old way of reporting with the new system.
- I have been using the system approximately X times during the past two months.
- If you haven't been using the system, why?
- On a scale from 1 to 10 how beneficial do you think the personalized learning plan was?
- How did you find the personalized learning plan to be beneficial?
- How have you been using the personalized learning plan during the training or after?
- On a scale from 1 to 10 how significant factor the personalized learning plan was for learning.
- How did the personalized learning plan affect the learning during the end-user training?
- On a scale from 1 to 10 did you find that the personalized learning plan increased the motivation for using the reporting system?
- How do you find the personalized learning plan to increase motivation?
- On a scale from 1 to 10 how useful it was to conclude the personalized learning plan in groups or pairs rather than doing it alone?
- What aspects affected your experience when concluding the personalized learning plan in groups or pairs.
- Open feedback from the training, workshops or other things.