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Predictors And Outcomes Of Team Learning In Higher Education Institutions

Roba Rabie Khalil Ibrahim ElBawab

PhD in Management, specialization in Human Resources and Organisational Behaviour

Supervisor:

Doctor Ana Margarida Passos , Associate Professor with Habilitation,
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Resumo

As instituições de ensino superior têm enfrentado muitas mudanças nos últimos anos, onde precisam de se adaptar a esta mudança para sobreviver. O objectivo principal desta tese é compreender e analisar os conceitos da aprendizagem em equipa e os processos de aprendizagem organizacional nas instituições de ensino superior e compreender a influência no desempenho. A tese inclui três estudos empíricos; o estudo 1 é qualitativo, e os estudos 2 e 3 são quantitativos. Os resultados do estudo no capítulo 3 sugerem que tanto a aprendizagem em equipa como a aprendizagem organizacional existem nas universidades, uma vez que são dois conceitos diferentes. Além disso, a aprendizagem informal deve ser considerada tanto a nível de equipa como organizacional, como parte dos processos de aprendizagem. Além disso, as conclusões demonstram que existe uma relação positiva de baixo para cima entre a aprendizagem em equipa e a aprendizagem organizacional. O capítulo 4 descreve um estudo que se foca na aprendizagem em equipa nas instituições de ensino superior. Os resultados do estudo demonstram a influência positiva da segurança psicológica da equipa e da liderança da equipa na aprendizagem em equipa e o impacto positivo da aprendizagem em equipa no desempenho da equipa. Além disso, este estudo fornece provas do papel mediador da aprendizagem em equipa entre segurança psicológica da equipa, liderança da equipa e desempenho da equipa. Finalmente, o capítulo 5 foca-se na validação da aprendizagem organizacional em instituições de ensino superior e nos seus preditores e resultados. Além disso, os resultados relatam a influência positiva da cultura de aprendizagem organizacional na aprendizagem organizacional e a relação positiva entre a aprendizagem organizacional e o desempenho universitário. Além disso, as nossas conclusões indicam a relação positiva entre a aprendizagem em equipa e a aprendizagem organizacional, o que apoia as nossas conclusões do capítulo 2. Esta tese contribui para a nossa compreensão da aprendizagem em equipa e organizacional nas instituições de ensino superior. Esta tese fornece também um modelo recentemente adaptado tanto para a aprendizagem em equipa como para a aprendizagem organizacional em instituições de ensino superior.

Palavras-chave: Aprendizagem em equipa, Aprendizagem organizacional, Instituições de ensino superior.

Abstract

Higher education institutions have faced a lot of change in recent years, where they need to adapt to this change to survive. The main goal of this thesis is to understand and analyse the constructs of team learning and organisational learning processes in higher education institutions and understand the influence on performance. The thesis includes three empirical studies; study 1 is qualitative, and studies 2 and 3 are quantitative. The study's findings in chapter 3 suggest that both team and organisational learning exist in universities, as they are two separate constructs. Moreover, informal learning should be considered at both team and organisational levels as part of the learning processes. Also, the findings show that there is a positive bottom-up relationship between team and organisational learning. Chapter 4 describes a study that focuses on team learning in higher education institutions. The study's findings show the positive influence of team psychological safety and team leadership on team learning and the positive impact of team learning on team performance. Further, this study provides evidence for the mediating role of team learning between team psychological safety, team leadership and team performance. Finally, chapter 5 focuses on validating organisational learning in higher education institutions and their predictors and outcomes. Also, the findings report the positive influence of organisational learning culture on organisational learning and the positive relationship between organisational learning and university performance. Also, our findings indicate the positive relationship between team learning and organisational learning, which supports our findings from chapter 2. This thesis contributes to our understanding of team and organisational learning in higher education institutions. This thesis also provides a newly adapted model for both team and organisational learning in higher education institutions.

Keywords: Team Learning, Organisational learning, Higher education institutions.

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List of abbreviations

EFA- Exploratory Factor Analysis

CFA-Confirmatory Factor Analysis

Introduction and literature review

1.1. Introduction

"Investment in higher education in organisation for economic co-operation and development (OECD) countries has increased substantially over the last 20 years, largely as a result of higher enrolment of students, increasing costs, government priorities related to skills, and research and innovation" (OECD, 2020, P.11). Subsequently, researchers started to focus on higher education institutions and their development. Learning is an essential factor in the development of organisations and universities are no exception. Learning helps organisations to adapt to the change faster (Watkins and Kim, 2017). Accordingly, human resources academics and practitioners focus on improving learning inside their organisations and also universities. At the beginning of 2020, the Covid-19 pandemic has affected universities drastically. They needed to rapidly change and adapt to the new situation, including shifting meetings, lectures and administrative work to online. And still, universities are working on adapting until this moment. So, since learning is an important approach that helps universities and organisations to adapt and grow, this thesis is going to focus on the learning in universities.

Learning can be studied and framed at different levels of analysis such as individual, team and organisational levels. Individual learning is related to the employees inside the organisation, group learning focuses on the members of the same team or a department, and organisational learning is related to the learning that occurs within the organisation (Daft, 2012). Learning comes from an individual's development of new knowledge and innovative ideas (Wiewiora et al., 2020). Individual learning indicates the behaviour of individuals (Argyris and Schön, 1978) and involves the development of interpretations and new understandings based on new and existing information (Fiol and Lyles, 1985). An employee learns by developing and refining different interpretations of new or existing information (Crossan et al., 1999). Team learning is suggested by researchers as an ongoing collective thinking process that includes reflection and action performed by team members through sharing knowledge and experiences (Edmondson, 1999; Kozlowski and Ilgen, 2006). While organisational learning is proposed by researchers as an ongoing learning process that is based on sharing knowledge and experiences within the whole organisation and occurs due to several relevant changes (Argote and Miron-Spektor, 2011). Since team learning previous work by scholars is not integrated (Decuyper et al., 2010) and organisational learning is understudied, human resources researchers acknowledge individual learning and team and

organisational learning importance in helping the organisations be more adaptive and competitive. Senge stated that “team learning is vital because teams, not individuals, are the fundamental learning unit in a modern organisation. This is where the rubber meets the road; unless teams can learn, the organisation cannot learn.” (1990a, p. 10). Therefore, this thesis is focusing on understanding team and organisational learning and not focusing on individual learning.

Although team and organisational learning help organisations to adapt to the change and stay competitive, little is known about how these processes are managed in higher education institutions. Some questions are raised 1) how do universities apply team and organisational learning? 2) what are the relevant processes to each of them? 3) how is team learning related to organisational learning in universities? This area has always been theoretical, and to the best of our knowledge, rare empirical studies have tackled this relationship. Moreover, previous research identified several facilitators for the learning processes, but it's unclear 4) which predictors are related to the learning processes in higher education institutions? Accordingly, this thesis focuses on these gaps, as within the thesis, we are exploring team learning, organisational learning and the predictors and outcomes of them in universities. Understanding these aspects is especially relevant at a time when higher education institutions have undergone unprecedented changes, in part due to the Covid-19 pandemic. Several gaps appeared from the previous literature; the gaps are 1) the identification of the relevant processes to team learning and organisational learning in universities, 2) the relationship between team and organisational learning in universities, 3) the relationship between organisational learning and higher education institutions indicators (ex: Times higher education indicators), 4) the relationship between organisational learning culture and organisational learning process. These four gaps will be addressed in this thesis.

The thesis is organized as follows: the first part covers a review of the main theories on team learning, organisational learning, and their predictors and outcomes. Second, we offer an overview of the main goals of the thesis. Three studies are presented, where they include one qualitative study and two quantitative studies showing evidence of the validity of our theoretical model. Finally, a discussion encompassing all the studies offers a comprehensive approach to the new adapted models and suggests a direction for future research.

1.2. Teams, Team learning, Team learning predictors and outcomes

Before describing team learning, a brief description of teams and their history and transformation is introduced. The involvement of a team in an organisation was found by

researchers as crucial to organisations, as it has become one of the important building blocks of organizational effectiveness over the past two decades (Wilson et al., 2007). The implementation of team-based work in daily organizational tasks is widely believed to be a performance improving human resource management application (Delaney and Huselid, 1996; Woerkom and Croon, 2009). The team is a more flexible way to perform tasks in organisations, and from this point forward, teams have been developed in organisations.

The history of teams' formulation has started as hierarchical, and then matrix teams, and finally to multi-team systems (Hatch and Cunliffe, 2006; Hobday, 2000; Marks et al. 2005; Roloff et al. 2011). The different forms of teams including transnational, virtual and global work teams continue to increase in their use within multinational corporations to coordinate activities across the entire organisation (Iskhakova and Ott, 2019).

Team operations have become increasingly competitive due to the continuous changes within the organisations. Teams would even have to work under tight schedules while managing several projects at the same time (Gevers, Rutte, and van Eerde, 2006; Santos et al., 2016; Waller et al., 2001). Even though the high competition the teams are facing, still teams are important as they help in facilitating the knowledge enablement across the projects in the organisations. Subsequently, the rising of team learning and its development over the years is the next topic discussed.

1.2.1. Team learning definition

Several attempts have been made over the years to define team learning. Team learning is proposed as a set of processes that occur when personal knowledge and experiences are being shared, discussed, and reflected on at the team level (Kozlowski and Ilgen, 2006). Also, Roloff et al. (2011) added that team learning defines processes and outcomes that involve positive change resulting from investments in developing shared knowledge or skills. Edmondson (1999) described team learning as "an ongoing process of reflection and action, characterised by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of action" (P. 353). Wilson et al. (2007) discussed team learning as "a change in the group's repertoire of potential behaviour" (p.1043). Senge et al. (1994) defined team learning as transforming conversational and collective thinking skills so that groups of people could reliably develop a team intelligence and abilities greater than the sum of individual members' talents. All the previous definitions of team learning described team learning as a collective learning process that occurs on the team level. Senge et al. (1994), Wilson et al. (2007) and Roloff et al., (2011) agreed that team learning should involve a change in the skills of the individuals that helps in developing the team intelligence

and greater abilities. While as Edmondson (1999) and Kozlowski and Ilgen, (2006) agreed that the team learning process involves the sharing and the reflection on the team experience. As for this study, we investigate the latter opinion as team learning is a process that focuses on the sharing of experiences and daily encounters, where the team reflect on these actions, seek feedback, ask questions, and discuss the errors.

Mitchell and Sackney (2000) suggested that in schools, team learning happens in a collaborative process in which members distribute knowledge, become part of collective discourse, and expand professional capacity. Team members clearly understand their tasks, share a sense of purpose, and do not avoid conflict in disagreement. Another scholar, Leithwood (1998), pointed out that team members need to learn two things. First, they have to develop a shared understanding of the team and collective action to accomplish its purposes. Second, as an individual teacher, a person must know what kind of contributions he can make for the collective learning of a team (Tanyaovalaksna and Li, 2014).

Scholars also referred to the team reflexivity concept to help in understanding team learning. Team reflexivity is proposed as 'the extent to which group members overtly reflect upon and communicate about the group's objectives, strategies, and processes, and adapt them to current or anticipated circumstances' (West, 2000, P.296). Across definitions, team learning involves a change in the way teams operate, a function of noticing and correcting problems. Most notably, team learning is a verb in this stream.

Few academics focused on how the individual learning process transformed and grew into a collective learning process (Kozlowski and Bell, 2008; Kozlowski and Ilgen, 2006). Team learning is emergent-fundamentally rooted in individual cognition, motivation, and behaviour but shaped and amplified by interaction over time to manifest at a collective level (Kozlowoski and Salas, 2010). Researchers proposed that the competitive advantage comes from teams rather than the individuals, as the synergistic value that comes from teams is inimitable by competitors (Barney and Wright, 1998, Van Woerkom and Croon, 2009). Hence, in this research, the individual learning approach is not the concern, as the focus is on team learning and its development.

Previous literature focused on team learning as input and outcome, and few studies highlight team learning as a process that requires action (ex. Dechant et al., 1993; Edmondson, 1999). Since team learning is a continuous learning process, research needs to test team learning as a process rather than as an outcome. Better understanding the process will Help in developing a constructive learning process; the learning process in the team helps in having better team effectiveness (Edmondson,1999). Also, research needs to show

how team learning is performed inside the organisation and the suitable components of the process (Roloff et al., 2011).

Edmondson et al. (2007) identified three research areas that describe how teams learn. The first area concentrated on team learning curves; the common theme in this area is exploring how teams improve differently by testing. The second area capitalises on the relationship between team cognitive systems and team task performance. Team learning is proposed as a consequence of communication and coordination that relies on team members sharing knowledge about their team, task, resources, and context. The third area theorised team learning as a group process rather than as an outcome. Studies following this tradition observed learning processes in teams and how these were affected by managerial and contextual factors and how they impact team performance. So, (Edmondson et al., 2007) proposed the three general team learning workstreams. These streams can be identified as firstly learning curves in operational settings (outcome improvement), secondly psychological experiments on team member coordination (task mastery), and thirdly field research on learning processes in teams (group process) (Edmondson et al., 2007). So, research needs to mention that each focus of team learning from the three streams might be related to organisational learning. The outcome improvement stream is primarily concerned with issues related to learning measurement. The task mastery stream research is focused on knowledge management. The group process stream examines how to learn (Roloff et al. 2011). In conclusion, the outcome improvement and the task mastery streams conceptualise team learning as improved task performance. Team learning from an outcome perspective is related to clearly defined tasks with measurable success. As for the group process stream, it is concerned with team learning as adaptive behaviours with the potential to promote success when tasks and context are less certain (Roloff et al., 2011).

Edmondson (2002) argues that not all effective teams are experiencing team learning, since some teams fail to communicate with other groups in the organisation or these effective teams are unable to deliver the new ways of working to be adopted with other teams.

1.2.2. Developed Frameworks of team learning.

As mentioned earlier, team learning has been identified to have three streams (Edmondson et al., 2007). The three research streams are (a) learning curves in operational settings (outcome improvement), (b) psychological experiments on team-member coordination of task knowledge (task mastery), and (c) field research on learning processes in teams (group process) (Edmondson et al., 2007). The three research streams are represented in Table 1.1

below. The table explains Edmondson and her colleague's operationalisation of the team learning concept and the methods used to reach the findings listed in the table.

The three mentioned learning streams, shown in table 1.1, can be identified as firstly learning curves in operational settings (outcome improvement), secondly psychological experiments on team member coordination (task mastery), and thirdly field research on learning processes in teams (group process) (Edmondson et al., 2007). So, research needs to mention that each focus of team learning from the 3 streams might be related to organizational learning. The outcome improvement stream is primarily concerned with issues related to learning measurement. The task mastery stream research is focused on knowledge management. The group process stream examines how to learn (Roloff et al. 2011).

Whereas the outcome improvement and the task mastery streams conceptualize team learning as improved task performance, usually related to clearly defined tasks with measurable success, the group process stream is more concerned with team learning as adaptive behaviours with the potential to promote success when tasks, success, and context are less certain (Roloff et al. 2011).

The first two streams of team learning were mainly focusing on the inputs and outcomes of team learning. While the researchers who want to understand thoroughly the team learning process need to know the input, process and output of the team learning process. More specifically as Roloff et al., (2011) stated: “the group process stream aims to understand the interpersonal processes in teams that constitute team learning”.

Table 1.1 shows a comparison between the three different team learning streams. The comparison is developed based on several concepts which are: Motivating concern, Concept of Team Learning, Dominant independent variable, Dominant dependent variable, Findings, and methods of studying.

Table 1.1: Comparison of three team learning streams adapted by (Edmondson et al., 2007)

Concepts	Stream 1: Outcome improvement	Stream 2: Task mastery	Stream 3: Group process
Motivating concern	At what rate do groups improve their efficiency?	How do team Members coordinate knowledge and skill to accomplish	What drives learning-oriented behaviours and processes in organisational workgroups?

tasks?

Concept of Team Learning	Learning is performance improvement—usually efficiency improvement	Learning is task mastery	Learning is a process of sharing information and reflecting on experience
Dominant independent variable	Codified knowledge; collocation or shared ownership; team stability; knowledge sharing	Group members trained together or separately; transactive memory system; communication	Team leader behaviour; psychological safety; team identification; team composition; organisational context
Dominant dependent variable	Rate of cost or time reduction	Performance on a novel task	Team effectiveness or learning behaviour
Findings	Amount of experience working together improves team performance outcomes. In later work, how people work together and dimension of improvement affects the rate of learning.	Having coordinated ways of codifying, storing, and retrieving individual knowledge is necessary to access individual knowledge for coordinated task performance.	Team leadership and shared beliefs about team psychological safety, goals, or identity promote or inhibit team learning behaviours and, in turn, team performance.
Methods of studying	Field research: Collection of quantitative data from teams producing a product or a service	Lab experiments: Small teams of students as subjects; random assignment to conditions to establish causality	Largely field research: Qualitative and quantitative data that provide observations of real organisational work teams

After displaying the team learning streams, this study will capitalise more on team learning as a process. Team learning as a process mainly focuses on how the team learns inside the organisation (Roloff et al., 2011).

Edmondson (2002) argues that not all effective teams experience team learning. Some teams fail to communicate with other groups in the organisation, or these effective teams cannot deliver the new ways of working to be adopted with other teams. Accordingly, this situation will lead to an ineffective organisational learning process. Consequently, learning remains local affected by individual and group level concerns and goals, rather than achieving organisational goals (Edmondson, 2002). This conclusion assumes that learning might only stay on the group level, and having it on an organisational level isn't possible in all types of organisations and contexts. To further understand team learning, several frameworks have been developed over the years by several researchers to operationalise team learning.

Edmondson characterised the dimensions of team learning as a) exploring and co-construction of meaning, b) reflecting, c) discussing errors and unexpected outcomes of actions, d) seeking feedback, e) experimenting within and as a team (Edmondson, 1999; Savelsbergh et al., 2009). Other researchers like Savelsbergh et al. (2009) use the exact dimensions as Edmondson to assess the instrument and validate it as a team learning indicator but added more dimensions. Savelsbergh, van der Heijden, and Poell (2009) added error communication and error analysis to their team learning instrument. On the other hand, another study modified Edmondson's instrument and created a six dimensions team learning instrument. The research described team learning behaviour dimensions as a) sharing, b) co-construction, c) constructive conflict, d) reflexivity, e) team activity and d) boundary-crossing (Decuyper et al., 2010).

Decuyper et al. (2010) also have capitalised and focused the research on team learning and the development of team learning framework. Decuyper et al. (2010) study has agreed with Edmondson's (2002) operationalisation of team learning and the creation of her framework. Decuyper et al. (2010) as well has developed a team learning framework that classified team learning to include seven dimensions. The framework has mainly consisted of sharing, co-construction, constructive conflict, team reflexivity, team activity, boundary crossing and storage and retrieval. In below table 1.2, the proposed definition by the researchers of each dimension is found.

Table 1.2: Team learning dimensions developed by (Decuyper et al., 2010)

Team learning dimensions	Definition
Sharing	Sharing is the process of communicating knowledge, competencies, opinions or creative thoughts of one team member to other team members who were not previously aware that these were present in the team. Wilson et al. (2007) have a slightly different definition of the concept, which emphasises that sharing is about distributing new knowledge, routines or behaviours.
Co-construction	Co-construction is the mutual process of developing shared knowledge and building shared meaning by refining, building on, or modifying an original offer in some way (Baker, 1994 in Van den Bossche et al., 2006).
Constructive conflict	Co-construction is the mutual process of developing shared knowledge and building shared meaning by refining, building on, or modifying an original offer in some way (Baker, 1994 in Van den Bossche et al., 2006).
Team reflexivity	As the processes of co-constructing, de-constructing and re-constructing shared mental models about current reality and about team goals and methods.
Team activity	Team activity is the process of team members working together, mobilising physical and psychological means required for goal attainment.
Boundary crossing	To seek or give information, views, and ideas through interaction with other individuals or units. Boundaries can be physical, mental or organisational.
Storage and retrieval	By means of storage and retrieval, shared knowledge, developed procedures, shared ideas, plans, habits, etc. that result from basic and facilitative team learning processes are saved in the software and/or the hardware of the team, in such a manner that they can serve for later use or subsequent inspection.

Since team learning is the basis of developing learning processes in an organisation, this research will understand how the team learning process is developed and how it applies in a higher education institution context. Research on the team learning process is relatively scarce in higher education institutions. That is why there is a need for developing a study to better understand team learning phenomena in a higher education context.

1.2.3. Team learning predictors

Several predictors have affected the team learning process. Edmondson et al., (2007) identified the learning predictors as, shown in Table 1.1, team leader behaviour; psychological safety; team identification and team composition. On the other hand, Decuyper et al. (2010) have identified that the team learning predictors are team communication, team leadership, and team psychological safety. In this study, we have used the predictors agreed upon by both studies which are: Team psychological safety and Shared leadership.

1.2.3.1. Team psychological safety

Team psychological safety is defined as "the shared belief that a team is safe for interpersonal risk taking" (Edmondson, 1999, p.354). It represents the quality of the team. Researchers propose that team psychological safety impacts team members' actions and eventually influences team learning activities. So, a team member may refrain from some actions if they feel this might lead him/her to be embarrassed, criticised or ridiculed (Kark and Carmeli, 2009, Kostopoulos and Bozionelos, 2011).

Psychological safety was first introduced by (Schein and Bennis, 1965). Who discussed the need for psychological safety for individuals to help them in feeling more secure and capable of changing. Edmondson (1999) discusses the application of team psychological safety. It helps spread the sense of confidence among the team without the team embarrassing, rejecting, or punishing a team member who speaks up. The confidence rises from the trust and mutual respect among the team (Edmondson, 1999).

Team psychological safety helps in creating a climate where team members feel comfortable being themselves. Also, team psychological safety describes the team, not the individuals, as all team members hold the same perception (Edmondson, 1999).

Some researchers addressed the relationship between team psychological safety and team learning behaviours (ex: Edmondson, 1999; Harvey et al., 2019). But few researchers addressed the relationship between team psychological safety and team learning processes, which is considered a gap in the team literature. It is essential to address this relationship as previous researchers mentioned the positive impact that team psychological safety has on team learning processes. Previous research suggests that the more team psychological safety

in the team, the better the team learning in the team. Also, another gap would emerge to assess the team learning processes that are affected by team psychological safety impacts.

1.2.3.2. Shared leadership

Shared leadership is defined as "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals" (Pearce and Conger, 2003, p. 1; in Song et al., 2019). Shared leadership is known as a collective leadership process performed by team members, where they participate in leading and leadership functions. Researchers proposed that team members share in the leadership to help achieve the goals (Day et al., 2004; Hoch, 2016; Hoch and Dulebohn, 2017; Pearce and Conger, 2003). Shared leadership is also described to share leadership functions among several team members or all (Hoch and Dulebohn, 2017). Engaging in team learning is difficult because individuals are drawn to avoid disagreement and conflict in a team. So suitable support is needed to encourage the negotiation of new ideas and prevent silence in a group (Edmondson, 1999; Koselag-Kreunen et al., 2020). Accordingly, leadership supports university teachers to debate with colleagues and seek controversy (Furco and Moley, 2012). Since university teachers are used to working independently with full autonomy, they overlook the need to change, develop, and share new knowledge (Koselag-Kreunen et al., 2018; Kosleag-Kreunen et al., 2020).

Shared leadership emphasises on team members engagement in leadership responsibilities (Song et al., 2019). All the team members are involved in the shared leadership and it's embedded in their interactions. Shared leadership is different from vertical formal leadership, which concentrates leadership processes to one person or a small group at a higher level in the organisation. So, the leadership processes would be centralised on a certain managerial level rather than involving the rest of the team in it. Part of leadership functions is that team members negotiate leadership responsibilities and share information through dyadic influence exchange relationships. These functions repeatedly occur, which leads to a collective form of structured leadership (Carson et al., 2007; Chiu et al., 2016; Song et al., 2019).

Since shared leadership helps develop team learning and supports team members in universities to accept the change. Therefore, shared leadership is needed to be studied in a university context as the predictor of team learning. Since this relationship and the impact of shared leadership on team learning processes are unknown, this thesis will focus on it.

1.2.4. Team learning outcomes.

1.2.4.1. Team performance

Team performance is a concept that is described through different aspects (Widman and Mulder, 2019). Researchers mention that effectiveness, efficiency, and innovation are the aspects that describe performance in organisations (Widman and Mulder, 2019). Effectiveness is related to the achievement of the goals and expectations of all the involved stakeholders. Also, researchers added that the products, services, and processes developed should be near perfect (Widmann and Mulder, 2019). Whereas the efficiency of a team discusses the input-output ratio or comparison (Ostroff and Schmitt, 1993) and refers to, for example, the team's adherence to budgets and schedules as achieving the tasks with the shortest time (Hoegl and Gemuenden, 2001; Van Woerkom and Croon, 2009). Innovation is related to the performance factor, which provides a key competitive advantage in high value-added industries and the service sector (Dunphy and Bryant, 1996). In the team's context, innovation relates to applying new ideas, processes, products, or procedures to the team, which helps improve team performance (Anderson and West, 1996; Van Woerkom and Croon, 2009). Efficiency and effectiveness are essential for teacher teams, as the teacher teams always have a limited time which is the academic year, to achieve their goals. But at the same time, teacher teams feel affected by team learning processes, as these processes might influence their autonomy (Vangrieken et al., 2017). But since there is limited time to adapt to change and meet challenges during the academic year, efficient teamwork is crucial (Wildmann and Mulder, 2020).

Previous literature shows that the influence of team learning on team performance has received much attention from researchers into organisational behaviour. Still, little is known about how team learning affects team performance and hasn't been studied (Van Woerkom and Van Engen, 2009). Since improved team learning can improve team performance (Budianto et al., 2020; Zellmer – Bruhn and Gibson, 2006), this research focuses on this relationship and which specific processes influence team performance in universities. Group researchers have always been interested in finding the process variables that impact team performance (Ancona and Caldwell, 1992b; Van Woerkom and Croon, 2009). In recent years, many teams face a lot of uncertainty and change, as teams need to engage in learning activities that help them understand the environment and improve their teams' processes (Edmondson, 1999, Van Woerkom and Croon, 2009). Since previous researchers proposed that learning helps teams adapt to the change, better achieve their objectives and eventually a better team performance (Bunderson and Sutcliffe, 2003; Edmondson, 1999). Therefore,

some researchers focus on the positive relationship between team learning and team performance (Chan et al., 2003b; Edmondson, 1999; Edmondson et al., 2001b; Savelsbergh et al., 2009; van der Vegt and Bunderson, 2005; van Offenbeek, 2001; Zellmer-Bruhn and Gibson, 2006). Other researchers mentioned the insignificant relationship between team learning and team performance (Santos et al., 2015; Santos et al., 2016). But what hasn't been studied is which team learning processes impact team performance and specifically in the education sector.

1.3. Organisational learning

Research for several decades has used the terms organisational learning and learning organisations interchangeably (Ortenblad, 2001). However, the literature has distinguished between both concepts (Argyris, 1999; Argyris and Schon, 1996; DiBella, 1995; Easterby-Smith and Araujo, 1999; Finger and Brand, 1999; Griego et al., 2000; Marquardt, 1996; Marsick and Watkins, 1994; Tsang, 1997; West and Burnes, 2000; Yang et al., 2004). The differences between these concepts and the definitions of both concepts are introduced in the subsequent sections.

1.3.1. Organisational learning definition:

Organisational learning is defined as the change that occurs in an organisation, resulting from knowledge memorised in organisations gathered from experience and changes in behaviour resulting from such knowledge (Argote and Miron-Spektor, 2011). Learning occurs naturally in an organisation; knowledge exists in individuals (Blackler, 1995; Cook and Yanow, 1993; Dodgson, 1993; Kim, 1993; Kontoghiorghes et al., 2005; Tsang, 1997). Moreover, other scholars added that the concept of organisational learning goes further than the interest in individual learning in organisations (Rebelo and Gomes, 2008). Organisational learning includes the proposal that organisations can learn through workers' learning, knowledge and sharing that knowledge, i.e. it consists of the idea that organisations learn and that learning can take place at an organisational level (Rebelo and Gomes, 2008). Learning can only take place on an organisational level when the employees start sharing their information, knowledge and experience throughout the organisation (Rebelo and Gomes, 2008). Many scholars have attempted to define organisational learning throughout the years. Crossan et al. (1995) and Huber (1991) agreed that organisations learn when there is a change in organisational behaviour; however, Huber (1991) added that this change might not lead to higher organisational performance (Bontis et al., 2002). Other scholars Schwandt and Marquardt (2000) suggested that organisational learning represents a complex relationship that links people, peoples' actions, symbols, and processes within an organisation (Bontis et

al., 2002). Most of the researchers have agreed that organisational learning is a process that is naturally found in an organisation; it includes interrelated relationships among individuals (Ortenblad, 2001). The process facilitates the transformation of the experience of the core organisational processes into shared knowledge, skills and ideas among individuals (Crossan et al., 1995; Huber, 1991; Schwandt and Marquardt, 2000). However, Bontis et al. (2002) argued that the learning process includes all organisational levels (i.e., individual, team and organisation). Afterwards, Argote and Miron-Spektor (2011) have defined organisational learning by summarising all the previous definitions. Argote and Miron-Spektor (2011, P. 1124) have defined “organisational learning as a change in the organisation that occurs as the organisation acquires experience.” The definition is quite similar to what has been proposed earlier, but Argote and Miron-Spektor (2011) added that the organisational learning process is a process that occurs over time.

Organisational learning includes four processes. The processes are information acquisition, knowledge dissemination, shared interpretation, and organisational memory (Huber, 1991; Santos-vijande et al., 2012). The process of information acquisition is about acquiring information from different sources, either internally or externally (Flores et al., 2012; Hubber, 1991). Internally is gathered from inside the organisation and from the company's founder or previously acquired experience. As for externally, it is gathered from the competitors and the marketplace, through acknowledging and acquiring the implicit analysis of the actions of the competitors. On the other occasions' firms look for the best practices, and the firms solve the problems by identifying key tendencies, collecting external information and comparing their performance with the competitors (Santos-Vijande et al., 2012).

Shared interpretation mainly relies on analysing the information from a global point of view. Therefore, the available information and how to use it is a priority for the organisation (Santos-Vijande et al, 2012). Also, the organisation develops shared mental models, and the help of solid communication tools foster shared interpretation. Moreover, another factor that is involved in the development of information is the questioning and assessment of the current mental models that are found in the organisation. Where organisations need to check if the available information is correct, need to assess the stored knowledge and reject obsolete and ambiguous beliefs or data, that affect the decision-making process in organisations (Holan et al., 2004; Santos-Vijande et al, 2012). "Information interpretation helps reduce equivocality and thus is important for developing shared underrating that leads to organisational learning" (Daft and Weick, 1984; Flores et al., 2012).

Organisational memory: since collective learning is always a part of organisational learning, then it is automatically connected to organisational memory. Organisational memory shows all the knowledge that the organisation collects at both processes of information acquisition, and shared interpretation (Flores et al., 2012; Santos-vijande et al., 2012). This process depends on adequate storage of knowledge so the individual could easily retrieve the information over time (Argote et al., 2003; Flores et al., 2012; Santos- vijande et al., 2012). It is important to have organisational memory (Cross and Baird, 2000; Santos-Vijande et al., 2012), as staff rotation won't lead to the loss of information, same as to the turnover of personnel (Flores et al., 2012; Levitt and March, 1988). The organisational memory process focuses on several processes such as encoding, storing and retrieval of knowledge (Flores et al, 2012), so it's not just an object as some scholars have proposed previously (Argyris and Schon, 1978). In this research we follow the notion of (Flores et al., 2012) as looking at organisational memory as a process which is consisted of the mechanisms, functions or actions organisations take to help in the encoding, storing and retrieving the previous experience that the organisation has learned.

Knowledge dissemination is a process that takes place in both formal and informal interactions among team members. Formally the interactions occur at a departmental meeting, on training or discussion of future needs, whereas informally, occurs on the daily interactions among team members (ex: a chat on the organisation's social platform like Microsoft teams and others). Formal networks and databases that are created inside the firms help in a faster communication process among the team members with accuracy and a better spread of information. Formal networks should be supported by an informal exchange mechanism, which allows the team member to transform the gathered implicit knowledge into explicit and more precise knowledge (Santos-Vijande et al., 2012).

1.3.2. Differences between learning organisations and organisational learning:

Another concept that has been developed within organisational learning literature was the concept of learning organisations. Since the 1990s, two branches began to appear in the literature: the organisational learning perspective and the learning organisation perspective. The organisational learning perspective was more descriptive and academic, where authors were interested in perceiving the learning processes in organisations. On the other hand, the learning organisation perspective was more prescriptive and practical, oriented towards the creation of models that helped organisations enhance learning, including how to benefit from it (Rebelo and Gomes, 2008).

Table 1.3: Differences between Organisational learning and learning organisations. (Source: Ortenblad, 2001)

	Organisational	
	Learning	Learning Organisation
Character of the content	Processes	Organisation form
Amount of normativity	Descriptive	Normative
	Exists naturally	Needs activity
	Neutral	Preferable
	Necessary	Not necessary
	Obtainable	Unreachable
	known	Unknown
Group of target	Academics	Practitioners and consultants

Table 1.3 shows the differences between the two perspectives as outlined by Ortenblad (2001). Organisational learning is defined as a set of processes or activities of learning in the organisation, while learning organisation is referring to a form of an organisation. Most organisations acquire learning, as it exists naturally in the organisation without exerting any effort to obtain it. However, not all organisations are considered learning organisations, as they may not utilise the knowledge that exists within the organisation.

Researchers argue that an organisation might experience learning but do not reach the ideal level of the learning organisation. So, the learning organisation is described as the ideal form (Ortenblad, 2001), which might be characterised as desirable, but at the same time hard to be reachable. A Learning organisation, contrary to organisational learning, needs efforts to be exerted for the organisation to utilise the experience of learning (Ortenblad, 2001). Learning organisation is partially described with the Unknown (Ortenblad, 2001). Where the organisation doesn't know whether it's a learning organisation or not. Because learning organisations are a desirable state (Ortenblad, 2001), Practitioners and consultants are interested in exploring this area, transforming traditional organisations into learning organisations, and maintaining the learning organisation. A learning organisation is focusing on the outcome, as the state that the organisation is trying to reach. On the other hand, organisational learning focuses more on the process that occurs inside the organisation. Studies on organisational learning processes are scarce, and without understanding them,

practitioners won't know how to improve them better. Subsequently, a study to better understand organisational learning processes in higher education institutions is needed.

1.3.3. Organisational learning predictors

Some predictors of organisational learning are mentioned in the previous literature. Some of the predictors that have a direct influence on organisational learning are known as knowledge sharing behaviour (Park and Kim, 2018), goal orientation (Chadwick and Raver, 2012), participative decision making, openness, learning orientation and transformational leadership (Flores et al., 2012). Learning culture is known by previous studies to have an impact on organisational learning. But, the relationship between organisational learning culture and organisational learning is still understudied.

1.3.3.1. Organisational learning culture

Organisational learning culture is stated by (Rebelo and Gomes, 2011) as "an organisational culture that is oriented toward the promotion and facilitation of workers learning, it's sharing, and dissemination, in order to contribute to organisational development and performance". It is proposed by researchers that organisational learning culture is an important predictor for organisational learning to take place (e.g. Campbell and Cairns, 1994; Conner and Clawson, 2004; Pedler et al., 1997; Rebelo and Gomes, 2017). Accordingly, this research will assess the relationship between organisational learning culture and organisational learning in universities. One of the frameworks that helps in assessing the learning culture is the dimension of learning organisations questionnaire (DLOQ) which has been developed by Marsick and Watkins (2003). The DLOQ is composed of 7 dimensions. Table 1.4 below includes the seven dimensions and their definitions.

Table 1.4: Definitions of the dimensions of learning organisation questionnaire adapted from (Marsick and Watkins, 2003 in Leufvén et al., 2015).

Dimension	Definition
Create continuous learning opportunities	Learning is designed into work so that people can learn on the job; opportunities are provided for ongoing education and growth.
Promote inquiry and dialogue	People gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others; the culture is changed to support questioning, feedback and experimentation.
Encourage collaboration and team learning	Work is designed to use groups to access different models of thinking; groups are expected to learn

	together and work together; collaboration is valued by the culture and rewarded
Create systems to capture and share learning	Both high and low-technology systems to share learning are created and integrated with work; access is provided; systems are maintained.
Empower people toward a collective vision	People are involved in setting, owning, and implementing a joint vision, responsibility is distributed close to decision making so that people are motivated to learn toward what they are held accountable to do.
Connect the organisation to its environment	People are helped to see the effect of their work on the whole enterprise; people scan the environment and use the information to adjust work practices, the organisation is linked to its communities
Provide strategic leadership for learning	Leaders model, champion and support learning; leadership uses learning strategically for business results

1.3.4. Organisational learning outcomes

As for the organisational learning outcomes, previous researchers have mentioned some outcomes that are influenced by organisational learning processes. These outcomes are known as organisational performance, organisational adaptation and many more. Although organisational performance is one of the most significant outcomes for any learning process, not much research has discussed it and how to improve university performance is still vague. Organisational performance is considered an important outcome as it shows whether the organisation is succeeding and achieving progress over the years or not. Also, it is one of the most important factors that any manager and stakeholder are focusing on.

1.3.4.1. Organisational performance

Organisational performance has always been a point of interest for all researchers, as it indicates whether the organisation is succeeding or failing (Abu-Jarad, Yusof and Nikibin, 2010). Some researchers described Organisational performance as striving to achieve the long-term organisational goals and objectives effectively and efficiently (Daft, 2000; Richardo and Wade, 2001; Robins and Wiersema, 1995; Shieh, 2011). Organisational performance is concerned with the economy, efficiency, effectiveness and quality of a certain program or activity (Pollanen et al., 2017).

Performance is at the core of all activities in any institution. An organisation's performance determines its survival in any given economy. Mackie (2008) defines organisational performance as the organisation's effectiveness in fulfilling its purpose. It would be prudent for organisations to develop appropriate means or methods for achieving targeted performance levels and appropriate performance assessment measures. These have to be designed within the context of a changing global business environment that is increasingly changing how business is conducted (Nzuve and Omolo, 2012).

Organisation performance is defined as the outcome of interactions of different parts or units in the organisation (Stankard, 2002). (Hussein et al., 2014) has defined organisational performance as the outcome produced from the organisational processes that occur daily. Organisational performance is also considered an indicator of how well the organisation has achieved organisational goals (Hamon, 2003; Ho, 2011). Ho (2011) has added on Hamon's (2003) definition of how the actual organisational output has met the intended organisational goals.

Moreover, organisational performance and effectiveness may include efficiency/productivity, growth/market share, customer orientation, quality. Other sectors may be interested in public image/ reputation and social performance. (Kaplan and Norton 1992, 1996).

Researchers have agreed that defining, measuring, and conceptualising organisational performance is not easy (Abu-Jarad et al., 2010; Hefferman and Flood, 2000). Different opinions and measures were developed for organisational performance (Barney, 1991). Most of the researchers focused on financial and economic measures to measure organisational performance. However organisational factors measured by non-financial measures were also important. Hansen and Wernerfelt (1989) found that economic factors represented only 18.5 % of the variance in business returns, while organisational factors contributed 38 % of organisational performance variance.

Organisations and researchers tend to measure organisational performance using financial measures. These financial measures were considered objective measures. These measures are revealed in measuring the company's Return on assets, return on investment and profit growth. Managers used to think that measuring organisation profitability is the only and best indicator (Galbraith and Schendel, 1983; Ramos et al. 2012; Robinson, 1982). In time managers found that financial measures only show the organisation's performance in the short term. Therefore, organisations started to search for other metrics to measure organisational performance. Managers and academic researchers conceptualised that they have to measure

the organisation's non-financial measures, including employee satisfaction, motivation and more (Mowday et al., 1982; Mayer and Schoorman, 1992; Rich, 1997; Zulkifli and Jamaluddin, 2000). Therefore, subsequent research suggests that managers and scholars agree that organisational performance is best measured using financial and non-financial measures. Literature has proven that subjective and objective performance measures are highly correlated, meaning both measurements are valid when measuring performance (Dess and Robinson, 1984; Homburg et al. 1999).

Using a multiple indicator approach to operationalise a firm's performance would be a better method than using only a single indicator like financial measurements. Eventually, the ideas surrounding Strategic performance management systems were developed. SPMS collect both financial and non-financial measures in one framework to give a better direction to managers of the organisations' performance (Chenhall, 2005). One of the well-known types and the most used by scholars and managers is the Balance scorecard (Hoque and James, 2000; Hoque et al., 2001; Lingle and Schiemann, 1996; Maiga and Jacobs, 2003). The balance scorecard focuses on four areas as indicators of organisational performance: financial performance, customer service, internal process and people, innovation and growth (Harrim, 2008). When reviewing the previous researches that have been developed and tested organisational performance in the earlier studies, many studies adopt various dimensions to measure organisational performance (Chung and Lo, 2007; Garnett et al., 2008; Green and Inman, 2007; Schiuma and Lerro, 2008). Some studies used only the financial measures to test organisational performance, like using Catalone et al. (2002) and Choi and Lee(2003) scales (Noruzi et al., 2013)). On the contrary, other studies used only non-financial measures and scales like Bontis et al. (2002) scale and Quinn and Rohrbaugh (1983) scale (Jimenez and Valle, 2011). Other studies combined the two methods and used different scales to measure performance (Garrido and Camerero, 2010; Goh et al., 2012; Harrim, 2008; Jyothibabu, 2010; Lopez et al., 2005; Ramos et al., 2012). known scales used to measure organisational performance using both financial and non-financial performance measures is the Balance scorecard.

Universities such as any other organisation need to consider their performance and to achieve their organisational goals. But universities as an organisation isn't studied frequently, as very few studies focused on assessing the university performance. A study developed in South Africa evaluated the performance of their university using the balanced scorecard (Harman et al., 2010). But still, it is an impractical measurement tool when the university's focus is on teaching and research (Tran and Pham, 2018). In this thesis, the emphasis on

assessing university performance is through 2 ways: considering the university's objective measures and then using the university indicators (ex: Times higher education indicators) that reflect the university's actual position at the time of research.

Goals and overview of the thesis

The aim of this thesis is threefold. First, we aim to explore the learning processes in higher education institutions' context as they promote adaptation to the change, better performance, and success of higher education institutions. Second, we aim to analyse the relationship between the predictors of team learning processes and their outcomes. Third, we aim to assess the relationship between the predictors of organisational learning processes and the outcomes in higher education institutions. In order to accomplish these aims, three studies were developed. The studies included both exploratory and empirical research to understand the phenomena in higher education institutions better.

In study 1 (chapter 3), we explore the existence of the learning processes in the higher education institution sector. Also, we assess the facilitators, barriers, and outcomes of the learning processes in higher education institutions. This study mainly focused on assessing both team and organisational learning processes in higher education institutions using an exploratory study and specifically assessing the relationship between them. We conducted interviews with master's program directors, dean, quality, and sustainability experts in Portuguese universities.

In study 2 (chapter 4), we analyse the direct relationships between shared leadership and team psychological safety as predictors of team learning and the team learning process. Also, this study focuses on assessing the direct relationship between team learning processes and team performance in higher education institutions. Finally assessing the mediating role of team learning processes in the relationship between team learning predictors (team psychological safety and team leadership) and team performance. In this study, questionnaires were collected from university teachers from different universities during Covid 19 pandemic.

In study 3 (chapter 5), we analyse the direct relationships between organisational learning culture as a predictor of organisational learning and the organisational learning process. Also, this study focuses on assessing the direct relationship between organisational learning processes and university performance in higher education institutions. Moreover, the study focuses on assessing the relationship between team learning and organisational learning. Finally, the study is assessing the mediating role of organisational learning processes in the relationship between organisational learning culture and university performance. A summary of the research questions and the expected methodologies to be used are mentioned in table 2.1.

Table 2.1: Research questions and methods

Study	Research question(s)	Methodology
Theoretical proposal (Chapter 1)	1- How is learning implemented in Higher Education institutions(HEI) ? a. What are the processes of team and organisational learning? b. What are the predictors and outcomes of team and organisational learning?	Literature review
Study 1 (Chapter 3)	1- What are the relevant learning processes in universities? a. How is team learning and organisational learning implemented in universities? b. What are the facilitators and barriers of team and organisational learning in universities? c. Is there a relationship between team and organisational learning?	Qualitative analysis(interviews)
Study 2 (Chapter 4)	1- What are the relevant processes to team learning? a. Is team learning a distinct construct? b. What are team psychological safety and team leadership relationships with team learning? c. What is team learning relationship with team performance?	Quantitative analysis Scale validation and correlational study; Exploratory factor analysis Confirmatory factor analysis Mediation analysis
Study 3 (Chapter 5)	1- What are the relevant organisational learning processes in universities? a. Is organisational learning a distinct multi-dimensional construct? b. What is the relationship between organisational learning culture and	Quantitative analysis Scale validation and correlational study; Exploratory factor

organisational learning?	analysis
c. Is there a relationship between team learning and organisational learning processes?	Confirmatory factor analysis Mediation analysis
d. What is the relationship between organisational learning and university performance?	Multilevel analysis

Team and organisational learning: A study for higher education institutions¹

Abstract

Today, higher education institutions are facing changes in the external environment and several challenges. Higher education institutions still need to adapt to new challenges such as uprising rankings, digital transformation, demographic changes, and changing students' needs. In order for higher education institutions to adapt to the change, they need to focus on their learning processes. Higher education institutions need to enhance their team and organisational learning processes, as learning is a multi-level process. The team learning process studies in higher education institutions area are scarce. Therefore, this study aims to explore which processes are related to organisational learning and team learning in higher education institutions. We engage in a qualitative study of universities. Where we collected 19 interviews from several master's programme directors, deans, and quality directors. This study finds several themes accompanied by the team learning process and organisational learning process. These findings offer meaningful theoretical implications for the literature on team learning and organisational learning in higher education institutions.

3.1. Introduction

Learning is mentioned in the literature as a key process that helps countries, organisations, and teams to progress and to adapt to change (Harvey et al., 2019). Most of the studies in this scientific area focus on how to promote an efficient learning process that helps students and employees to develop their skills, abilities, and knowledge. Higher education institutions (HEIs) play an essential role in studying and promoting learning. HEIs have always been places of learning, either through their teaching activities or through the production of knowledge using research and development activities. In recent years, HEIs are increasingly encouraged to change (Voolaid and Ehrlich, 2017). The increasing competition between universities on a global scale, the change of the demographic structure of populations, and the digital transformation (Posselt et al., 2018) are just a few examples of the higher education institutional environment that demands more organisational flexibility and agility (Kozlowski et al., 2010). In order to adapt, higher education institutions need to

increase their learning and adaptive capabilities not only at the individual level but essentially at a team and organisational level (Cyert and March, 1963). Despite the relevance of team learning and organizational learning for success in higher education institutions, there is a small number of publications that cover how the learning process is developed within this particular type of organisation (Decuyper et al., 2010). Therefore, more research is needed to better understand the learning process in higher education institutions and their practices.

The learning process is defined as the continuous creation of knowledge, skills, and abilities (Buchanan and Huczynski, 1997) that can occur at the organisational, team, or individual level. Organisational learning is acknowledged by previous research that helps higher education institutions to adapt to changes and face these challenges (Voolaid and Ehrlich, 2017). Also, organisational learning is vital for higher education institutions since it helps to improve university performance. Despite the relevance of organisational and team learning in management research, there are still some relevant gaps in the literature related to learning in higher education institutions.

The first gap is related to the description and identification of the organisational and team learning practices in higher education institutions. In previous research, organisational learning and learning organisations are used interchangeably (Werner, 2017). However, several researchers have called for the distinction between both concepts. Accordingly, organisational learning exemplifies “a process of creation, transfer and/or modification of knowledge initiated by an organisational member and/or groups of members to improve organisational performance and outcomes (Real et al., 2014 cited by Chou and Ramser, 2018, p.133)”. On the other hand, the learning organisation describes a desirable learning state (Ortenblad, 2001). This study focuses mainly on the concept of organisational learning since learning is proposed to be on all levels in the organisation.

The second gap concerns the relationship between organisational learning and team learning. For example, for Senge (1990), learning happens on the organisational level, whereas for Edmondson (2002), organisational learning occurs on the team level. This contradiction of the concept of organisational learning has left the research in this area still underdeveloped. Tuggle (2016) raised the question of where the learning processes are centred, and on which level the learning processes are initiated. Moreover, Watkins and Kim (2018) have mentioned that this is one of the gaps that until now has not been explored and needs more research. Especially when it comes to higher education institutions, as most researchers are claiming the occurrence of the learning process is at the organisational level.

This study aims to contribute to the clarification of these gaps by better understanding the learning process in higher education institutions, and exploring and differentiating the processes and outcomes related to organisational learning, and those related to team learning in higher education institutions. This clarification is essential to promote more competitive and adaptable higher education institutions to an increasingly demanding context.

3.2. Theoretical background

Organisational learning has been pointed to as a relevant organisational process that helps organisations to change and adapt (Kezar and Holcombe, 2019), as organisational learning is an important field in the management literature (Chiva and Habib, 2015). The main idea is that organisational learning includes the proposal that organisations can learn through employees' learning, knowledge, and sharing that knowledge. In other words, it includes the idea that organisations learn, and that learning can take place at an organisational level (Rebelo and Gomes, 2008).

The change in the external environment is a fact that organisations must accept and should always try to adapt to it. Many studies have discussed the need for organisations to incorporate organisational learning to be able to adapt to this change and to have better performance (Chou and Ramser, 2018; Santos-Vijande et al., 2012).

On the other hand, Edmondson (2002), describes the learning processes in organisations. She has mentioned that learning is mainly developed at the team level and then rises to the organisational level, where the learning process is much more of a bottom-up approach rather than a top-down approach. Edmondson (2002) has shed the light on team learning as the origin of organisational learning. Decuyper et al. (2010), called for more empirical research to link team learning variables to academic achievement. Few researches have discussed team learning in higher education institutions. The rest of the theoretical background shows the previously developed literature in the team and organisational learning areas. Also, this study will explore the relationship between organisational and team learning in higher education institutions.

3.2.1. Team learning

Team-based organisations are being adopted by many types of organisations, from the public to private sectors and across different industries. Teams are more flexible and adaptable, which is mandatory when facing complex and dynamic environments such as what most organisations currently face (Daft, 2012). Teams also facilitate knowledge enablement across projects in organisations. Previous research suggests that learning in teams is an important element of organisational responsiveness to change (Harvey et al., 2018).

A team can be defined as (a) two or more individuals who (b) socially interact (face-to-face, or, increasingly virtually); (c) possess one or more common goals; (d) are brought together to perform organisationally relevant tasks; (e) exhibit interdependencies concerning workflow, goals, and outcomes; (f) have different roles and responsibilities; and (g) are together embedded in an encompassing organisational system, with boundaries and linkages to the broader system context and task environment (Alderfer, 1977; Argote and McGrath, 1993; Kozlowski and Bell, 2006). Teams are the basic unit of work at any organisation, as they help in the achievement of goals (Men et al., 2019). As for universities, teacher teams include groups of teachers working together in a unit, a programme, or a department.

The team learning process is described as an ongoing process of reflection and action, that occurs when individual knowledge and experiences are shared and discussed collectively (Edmondson, 1999, Kozlowski and Ilgen, 2006). This process of team learning is characterised by collective thinking (Senge et al., 1994), asking questions, discussing errors or unexpected outcomes of actions (Edmondson, 1999; Santos et al., 2015), seeking feedback, experimenting, and reflecting on the process and results (Edmondson, 1999). The team learning process outcomes involve positive change (Roloff et al., 2011), team intelligence and abilities more notable than the sum of the individual members' talents (Senge, 1994), and team performance (Savelsbergh et al., 2009).

Edmondson et al. (2007) identify three different areas of research that describe how teams learn. The first area focuses on team learning curves (outcome improvement stream). Team learning curves are known to be impacted by the experience and to improve accordingly. The more the team learns over time, the more the experience the team retains, and as such the improvement rate increases. The second area focuses on the relationship between team cognitive systems and team task performance. Also, the second area focuses specifically on psychological experiments on team member coordination (task mastery stream). Team learning is proposed as the communication and coordination that relies on team members. Team members share knowledge about their team, task, resources, and context. The third area theorises team learning as a group process rather than as an outcome (group process stream). Studies following this third tradition observed learning processes in teams and how these were affected by managerial and contextual factors. Moreover, they impact team performance (Edmondson et al., 2007). In short, the outcome improvement stream is primarily concerned with issues related to learning measurement. The task mastery stream research is focused on knowledge management. The group process stream examines how teams learn (Roloff et al. 2011). More specifically, as Roloff et al., (2011) stated: "the group

process stream aims to understand the interpersonal processes in teams that constitute team learning”. Subsequently, this research will focus on the group process stream as it discusses team learning as a process.

Although the team learning process is proposed to be an important research area, few studies have been carried out that discuss team learning processes in organisations. One of the researches discusses that team learning processes is developed of several processes like sharing, co-construction, constructive conflict, team reflexivity, team activity, boundary-crossing and storage and retrieval (Decuyper et al., 2010). Also, few studies discuss team learning as a process in higher education institutions (Decuyper et al., 2010). This research will focus on understanding the team learning process in higher education institutions.

Some researchers discuss that Learning occurs in school teams, where team members share the knowledge collectively (Mitchell and Sackney, 2000). Team members clearly understand their tasks, share a sense of purpose, and do not avoid conflict in disagreement. Another researcher, Leithwood (1998), points out that team members need to learn two things. First, they must develop a shared understanding of the team and what collective action is required to accomplish its purposes. Second, as an individual teacher, a person must know what kind of contributions S/he can make for the collective learning of a team (Tanyaovalaksna and Li, 2014). Still, more research is needed to describe what the team learning processes are? and how to develop a team learning process in higher education institutions? This research will address these questions by a better understanding of the team learning process.

3.2.2. Organisational learning

Organisational learning is defined as the process that occurs in an organisation, as a result of memorised knowledge, knowledge sharing, and the change of the behaviour in organisations resulting from such knowledge (Argote and Miron-Spektor, 2011, Crossan et al, 1995; Huber, 1991). Knowledge exists in individuals (Kontoghiorghes et al., 2005); moreover, organisational learning goes further than the interest in individual learning in organisations (Rebelo and Gomes, 2008). Organisations can learn through workers learning, knowledge, and sharing that knowledge (Rebelo and Gomes, 2008). Subsequently, learning exists on the individual, team, and organisational levels (Kim, 1993).

Cyert and March (1963) mentioned a multi-level hierarchy of procedures that would accomplish organisational adaptation. Therefore, organisational learning helps in organizational adaptation. Also, organisational learning promotes better organisational actions such as (focusing on organisational psychological safety and dedicating time for reflection)

because it allows a better understanding of the knowledge produced and shared (Edmondson, 2002; Fiol and Lyles, 1985; Garvin et al., 2008). Subsequently, organisational learning promotes organisational performance.

Researchers agree that organisational learning theory involves modified actions depending on the reflection of new knowledge and insight relevant (Garvin et al., 2008). March and Simon (1958) mentioned that organisational behaviour depends on organisational processes, as it leads to unpredictability of the organisational decision making.

Research on organisational learning has increased considerably since the 1980s. However, there is no consensus on the role of organisational learning confusion about organisational learning theory (Schluz, 2002). Is the theory about organisational learning sources? Is it applied to different forms of learning, or is it based on the outcomes of learning? The main question remains: Should organisational learning be considered as a predictor, process, or outcome? Accordingly, the theorists of organisational learning mention that organisational learning is broad and has several approaches. It depends on how the researcher approaches the subject. Some researchers approach organisational learning theory as source of learning, others discuss organisational learning as a process that occurs related to knowledge, and the last approach which is related to the organisational outcomes. Accordingly, organisational learning theory can include 3 approaches: input, process and output.

The theory of organisational learning is divided into three approaches (Schluz, 2002): 1) learning as improving the outcomes, 2) learning as recording and 3) learning as an evolution of knowledge. Learning as improving outcomes is the theory of organisational learning that focuses mainly on organisational learning to help in the improvement of organisational outcomes (ex: organisational performance, organisational success, and organisational precision) (Schluz, 2002). Learning as recording focuses on organisational learning by the recording of organisational knowledge. This is related to how organisational learning helps in the process of sharing and retaining organisational routines. Organisational routines are described as the organisational procedures, rules, technologies and strategies (Levitt and March, 1988). Learning as recording focuses on the process of organisational learning rather than the outcomes of organisational learning (Schluz, 2002). Learning as an evolution of knowledge also focuses on the process rather than the outcomes. It is related to the previous theory-learning as recording. In this theory, the process of learning not only focuses on recording the knowledge but also on the change that happens to the organisational knowledge (Schluz, 2002).

This research aims to better understand the organisational learning processes in higher education institutions. This research follows the organisational learning process as a set of actions that occurs on the organisational level and makes a change in the behaviour within the organisation through sharing information that flows through the organisation. This definition follows (Argote and Miron-Spektor, 2011; Hubber, 1991).

Several researchers tried to conceptualise organisational learning and learning organisation, where these two terms were interchangeably used in the previous literature. However, Easterby-Smith and Lyles, (2011), mentioned that there are differences between organisational learning and learning organisation concepts. So, researchers should focus on which concept they are developing. When speaking about developing organisational learning frameworks, Senge's (1990) five disciplines of the learning organisation has been the most widely used framework in writings about higher education organisations. Senge's (1990) five disciplines are system thinking, personal mastery, mental models, building shared vision and team learning. In the review developed by Ortenblad and Koris (2014) it is mentioned that 41 of the 73 studies (56%) utilised Senge's framework in their analysis. Higher education institutions are complex organisations and therefore Senge's call for systems thinking, and his five disciplines could be quite useful to understand the bottlenecks for organisational learning. The typical problems for higher education institutions are inaction and different departmental disciplinary cultures that prevent communication and learning (Leišytė and Enders, 2011).

Garvin et al. (2008) define learning organisations as “places where employees excel at creating, acquiring and transferring knowledge” (p. 110) and specify three building blocks of such entities: (1) a supportive learning environment (2) a concrete learning processes and practices, (3) leadership behaviour that reinforces learning. According to these authors, a supportive learning environment is created when an organisation provides psychological safety for employees, promotes an appreciation of differences and openness to new ideas, and allows time for a pause in the daily routine that encourages the thoughtful assessment of organisational processes. The second building block - concrete learning processes and practices, represent the generation, collection, interpretation, and dissemination of information together with some other systematic practices. The last building block is leadership behaviour that reinforces learning. This comprises certain leader behaviours such as actively questioning and listening to employees; encouraging multiple points of view; and providing time, resources, and venues for reflecting and improving on past performance (Garvin et al., 2008). The authors also emphasise that these three building blocks reinforce one another in learning organisations and to some extent, they overlap. Garvin and his colleagues mainly agree with

Edmondson's (2002) work that states that learning as a process is mainly developed on the team level and then rises to the organisational level, i.e. a bottom-up approach. This concept of learning organisation disagrees with the previously mentioned frameworks, whereas Senge (1990) mentions team learning as a dimension of a learning organisation. This flow of ideas pushes the author of this study to start investigating team learning and specifically the team learning process in higher educational institutions.

3.2.3. The relationship between team learning and organisational learning

Research on the team and the organisational learning demonstrate substantial variance in experimentation or trial-and-error learning processes across groups (Edmondson, 1999, 2002) and organisations. An increasing amount of work in organisations is carried out by teams (Osterman, 1994). Edmondson (2002) proposes that learning takes place in an organisation primarily on the team level, where actions and interactions take place among the team members. We know little about how organisations change or fail to change through adaptive processes carried out by teams (Edmondson, 2002). Teams are considered the essential unit for any organisation (Edmondson, 2002; Senge, 1990).

Although researchers mention that the team is the main unit of learning, other researchers debate where the learning takes place, i.e. whether the learning is at the team level or the organisational level. Crossan et al., (1999) mention that there is a link between all levels inside the organisation, where the individual level is connected to the team level, and the team level is connected to the organisational level. Also, Crossan et al. (1999) suggest that there are feedback relationships among the levels of the organisation and that learning flows between these levels. Crossan et al. (1995) suggest that there is a serious need for research to examine the relationship between individual learning, team learning, and organisational learning.

Moreover, there is little empirical research in the organisational learning literature investigating this variation, or exploring how an organisation's teams affect its overall learning goals. Thus, the implications of Senge's, (1990) proposition that teams are the unit of organisational learning, have remained largely undeveloped. There is limited empirical research on team learning in real organisations, and a lack of theoretical work on how different kinds of teams and team processes affect organisational adaptation and organisational learning.

Organisations that try to have an organisational learning process must maintain a team that works on exploring and developing new capabilities. Also, organisations should have another team that mainly focuses on executing and improving existing capabilities. From this

point forward, organisational learning is considered local, meaning that it mainly focuses on specific task organisation and interpersonal organisation which is affected by individuals' perceptions of the social climate. Finally, variegated organisational learning is non-uniform in both learning and learning goals (Edmondson, 2007).

3.2.4. Team and organisational learning in higher education institutions

Organisational learning in higher education institutions is described as, the collective learning process of socialising new members to the norms and values of the institution and allowing all organisational members to understand institutional identities and missions more completely (Dee and Leišyt, 2016). Goals for equity and justice can also be pursued through learning practices that enhance the capacity of previously marginalised groups to advocate for change (Dee and Leišyt, 2016).

Bess and Dee (2008) and Kezar (2005) highlight that even if higher education institutions have a mission and strategic goals that promote learning, higher education institutions barely focus on learning to improve the whole organisation. High levels of specialisation and structural differentiation (academic departments, research institutes/centres, as well as administrative units) encourage individual accomplishment and weaken feedback loops. Subsequently, colleges and universities are often impacted by not attaining organisational learning (Kezar and Elrod, 2012).

Extensive decentralisation, autonomy for academic units, and faculty identities that are often more strongly oriented to their disciplines (a cosmopolitan orientation) than to their employing institutions (a local orientation) can result in units operating as distinct silos, with little interaction, coordination, or learning between them. Although faculty members are subject to evaluation of their research and teaching, fully functioning feedback loops regarding organisational outcomes are seldom in place (Westerheijden et al., 2013).

Most attention to organisational learning is also suggested by a range of institutional improvement initiatives, some internally driven, and others externally mandated. The literature on accreditation and assessment makes direct reference to the importance of organisational learning. Self-studies conducted for accreditation have the capacity to foster organisational learning (Martin et al., 2001). The accreditation process requires institutions to compile and analyse data related to a range of performance areas, and based on that data, develop an appraisal of institutional performance.

The assessment of student learning outcomes is also intended to stimulate organisational learning (Ewell, 1997). Faculty and administrators can use assessment data to

understand what students are learning, and the data can be used to identify areas for improvement in teaching practices, curriculum, and student support services (Banta and Palomba, 2015). Related research has examined faculty learning communities (FLCs), which are defined as a group of faculty members “who engage in an active, collaborative, year-long programme with a curriculum about enhancing teaching and learning with frequent seminars and activities that provide learning, development, the scholarship of teaching, and community building” (Cox, 2004, p. 8). FLC participants often experiment with innovative teaching practices in their courses, while receiving advice and support from their FLC colleagues. A growing body of research has begun to document how FLCs contribute to pedagogical innovation and self-reported teaching effectiveness (Beach and Cox, 2009). This literature, while emphasising learning at the individual and group levels, lacks an analysis of the organisation-wide level. Schroeder (2011) argue that faculty development centres (sometimes called centres for teaching and learning) can foster organisation-wide learning by building connections across disciplines and departments by increasing trust between administrators and faculty. However, in Dill’s (1999) study of organisational learning in 12 universities, the faculty development centres at those institutions focused primarily on individual faculty learning, not on creating knowledge for the whole organisation.

Finally, few studies have used organisational learning as a conceptual framework for conducting original research in the field of higher education. Subsequently, higher education researchers are looking at the benefits of using a conceptually rich construct that can inform understandings of a range of organisational phenomena (Dee and Leišyt, 2016). Therefore, we conducted an exploratory qualitative study with relevant higher education institutions members.

3.3. Research methods

3.3.1. Participants

Participants in the study were master’s programme directors (N=15), quality and sustainability managers department (N=2), dean and vice-dean (N=2) from different universities in the Lisbon area. In total, 19 interviews were conducted. Data were collected between May and November 2019.

3.3.2. Procedure

Participants were contacted by email in which we explained the main objectives of the study and requested an appointment for an interview. We contacted individuals from several scientific areas to cover different perspectives. The participation in the study was voluntary and their confidentiality was assured.

The interview protocol was developed based on the previous literature and was structured around six main areas. For each area, there was a main question about the area and several questions under each topic (Check Appendix A). First, introduction questions that explained the role of the participant in the university, and the duration spent in this role. Second, understanding the organisational learning processes from the interviewee's perspective. Third, learning about the team learning processes and application in the university context. Fourth, the participants identify the barriers and benefits of the learning process. Fifth, the participants mention the outcomes of the learning process. Finally, understanding the participants' perception of the relationship between organisational learning and team learning in the university context.

The conducted interviews were semi-structured allowing new questions to be presented throughout the interview, as a result of interviewee responses (Graça and Passos, 2015). Also, the questions were open-ended. Two subject-matter experts revised the interview guide and gave their opinions.

We started with a question that addressed the main idea of the study and then posed further questions that addressed the five ideas previously mentioned. The two subject matter experts were human resources management professors, and they helped in better refining the questions as one of them was related to the learning processes research area and the second was related to the human resources management research area in general.

The interview took 37 minutes on average for each participant. Before the interview started, a brief presentation about the topic was held and permission to record the interview was obtained. All the interviews were recorded and transcribed by the researchers. Transcription resulted in a corpus that consisted of 56880 words on 132 pages. The thematic analysis approach was used to better understand the data, where categories and sub-categories were created. Specifically, template analysis was conducted as recommended by (Symon and Cassell, 2013) for both.

3.4. Results

3.4.1. Data analysis strategy

The data were analysed through content analysis. MAXQDA 2018.2 software was used to help in the coding process of the transcripts. First, priori themes were presented from the previous literature. Then two categories of codes were developed, as parent codes and sub-categories. The data were analysed as “multiple chunks” (Miles and Huberman, 1994). The coded segments were represented in the data by a sentence, a part of a sentence or numerous sentences. Transcript analysis started deductively, based on the interview topic. Uncoded

segments were analysed inductively and were given a new code or sub-code. Throughout the coding process, the researcher referred to the literature to better understand and operationalise the emerging codes. The codes are available in a codebook and the coding process has been repeated several times.

The codebook includes the category dictionary for the two main themes which are team and organisational learning. For the main team learning theme, seven priori categories were identified from the model (see Decuyper et al., 2010). The seven priori themes are sharing, co-construction, constructive conflict, team reflexivity, team activity, boundary-crossing and storage and retrieval. Regarding the organisational learning theme, 3 priori categories were identified from the model (see Garvin et al., 2008). The three priori themes are supporting learning environment, concrete learning process and practices, leadership behaviour that reinforces learning. From the process of data analysis, other categories emerged posteriori. The posteriori categories that are related to team learning are communication, unstructured team learning process and informal learning. The posteriori categories that are related to organisational learning are meetings, regulations and procedures and unstructured organisational learning process.

3.4.2. Results

3.4.2.1. Team Learning:

The first learning process that is described in this research is the team learning process and how it is interpreted in higher educational institutions. Where several themes have caught the attention of the researcher, the highly impactful themes that are derived from the interviews are informal relation and informal learning in teams, unstructured team learning process, sharing among team members, formal and informal meetings during the semester, team activity, storage and retrieval, communication and informal relation and informal learning (see table 3.1).

Table 3.1: Team learning findings

Theme	No. of Codes	Example
Formal and informal meetings	36	“We have meetings but also informal meetings to discuss problems with the course and daily problems that come up” (Participant 2)

Communication	26	<p>“For instance, I have got at the end of one year of knowledge, I collect some knowledge that I’ll share with the director, for example why they think this program is better than the rest of the programs in the country. Sometimes I do not share with the university as a whole. But I share with the director of the department and with the director of the scientific council of our department.” (Participant 8)</p> <p>“This is done through the exchange between me and the professors through these meetings.... and sometimes by email, and sometimes by changing direction on a one on one communication between the professors.” (Participant 6)</p> <p>“When the shared information is very important, we’ll send it straight away to the scientific committee to inform everybody.” (Participant 16)</p>
Sharing among team members	22	‘We do have some formal moments of learning and sharing.’ (Participant 18)
Unstructured team learning process	18	‘I think because this today happens in an unstructured way. If it would be a more structured thing. Probably a meeting room and some certain assigned schedules would help promote team learning.’ (Participant 6)
Team activity	13	“Sometimes we are not very satisfied with the results in here and there. We change. This year we changed the way we are going to evaluate and do theoretical exams. So, the theoretical exams will change. And some parts of the themes of the areas that we teach. We also changed more to more cosmetic. Let's see some small parts of the groups that we teach our fossils. Also, change. So, this year we have two types of changes. Small changes in the

		<p>subjects that we teach and the way we will go to.</p> <p>We will make and evaluate the final exams this year as these two are different every year. Normally we promote some differences we change some of the slides or we change some of the tables and some of the content.” (Participant 13)</p>
Storage and retrieval	13	<p>“but the essential information created is spread through our network. Our programme is located more not in the department of the school, but more in the research centre of the school third cycle that is doing research. And we spread all this information through our international and national network, let’s say in a formal way.” (Participant 14)</p>
Informal relations and informal learning	12	<p>“Informally again, for instance, the WhatsApp that I was telling you and of course here I am talking about a core part of the group. Also arrange a meeting by phone or the fact that we have a very good relationship allows us to pick up the phone and tell something or ask or learn or learn. I mean ask them to get the answer to send an email or just walk in and meet them.” (Participant 18)</p>
Connecting learning to the system	10	<p>“Normally there is a review of information created I would say. But when this happens it is, if we are talking about the more formal part of our career then this stays or disappears as a formal rule that is available in the university intranet” (Participant 9)</p>
Regulations and procedures	9	<p>“These learning goals that I have shown you. They are static. We do not use to change it. And the problem is depending on that. I am a manager of the programme. I can’t select the professors. The professors are assigned by the director of the department. This year can be one and the next year can be another.” (Participant 1)</p>

Student feedback	9	“We have in the university one meeting every semester with student representatives, and that is an important and crucial moment in the semester” (Participant 5)
Team reflexivity	8	“to a different aspect of self-evaluation report for instance. But this vision, I guess we can call it common vision as it came from discussions that we had along the process.” (Participant 17)

3.4.2.2. Organisational learning:

The second learning process that has been discussed and that caught the attention of the researcher is the organisational learning process and how the master’s programme directors, vice dean, dean and quality and sustainability departments from different universities think of this process in the university context. Most of the participants think that organisational learning is not the core of the university. For instance, participant (8) stated that ‘But I don’t know exactly to tell if organisational learning is a core aspect or not.’

However, some of the master’s directors believe that it should be the core of a university since universities’ main task is to manage the learning process. As participant (13) has mentioned: “I have to say it's a core at least we feel it. One of our main tasks is of course to teach, to be able to perform and to transfer knowledge. That's our main task”. Participant (17) mentioned, “well, university organisational learning must be a core aspect, although even in the non-teaching staff the departments that support the professors and the activities of teaching and research.”.

But still, the concept of organisational learning in higher education institutions is not clear. As, the participant (17) discussed “But as I was telling you before, I guess there is some road to make in this organisation, probably announcing and making clearer that organisational learning is paramount for the university to become a better university.... also including the non-teaching staff could learn more with other schools.”

The concept is not clear from the interviews that were performed. The researcher started to focus more on organisational learning and how the interviewees described it. From the interviews, several themes were addressed and highlighted when the researchers better understood the organisational learning process.

Therefore, this study mentioned several factors most commonly involved in organisational learning. The most mentioned categories within the interviews (that were

discussed when tackling the organisational learning area) are meetings, supportive learning environment, sharing information, pedagogical practices, regulations and procedures and the unstructured learning process (see table 3.2).

Table 3.2: Organisational learning findings

Theme	No. of Codes	Example
Meetings	29	“In terms of organisational learning, how do we work? We work based on meetings..... In these meetings, we share what we have achieved and ask for feedback. So those meetings have a dual goal. The goal of informing of new things that are happening, but also have passed this area and receiving feedback to adjust.” (Participant 12)
Organisational learning	21	<p>“But I don’t know exactly to tell if organisational learning is a core aspect or not.” (Participant 8)</p> <p>“Well as a university, organisational learning must be a core aspect, even in the non-teaching staff the departments that support the professors and the activities of teaching and research.” (Participant 17)</p>
Supportive learning environment	17	“We try to apply organisational learning. Through some workshops how can we write a thesis, how can we see the stress psychological of the students. We do have some workshops for the teachers and professors that we share with each other.” (Participant 1)
Sharing of information and pedagogical practice	17	“It’s not about imposing to the school whatever we want to do. But sharing with the school, the elements of the school and getting feedback.” (Participant 12)
Regulations and procedures	16	‘Of course, there are guidelines that come from the rectorate that make me change and might affect the work that I do. But those are rules, which are not in the form of the daily work that you do. There are more specific rules and specific tasks’

(Participant 9)

Unstructured learning process	14	“Because we don’t have processes that promote this learning” (Participant 7)
		“Processes keep on changing. I look at other universities and other colleagues who are working at other universities and you can find a pattern of processes that they endure throughout the years. Our university seems that we are always searching for a good process or the best process. Probably the ones that the rector wants to impose, and we keep on changing these kinds of procedures and these kinds of ways of working. And it is hard.” (Participant 9)
Few organisational learning activities	13	“Yes, but we don’t discuss, that’s something that’s missing. For instance, we don’t put in the mission and the vision in the university. Even in the schools, we don’t use the time rack learning and organisational learning. It’s so ingrained in our minds that what we do is learning and teaching that we don’t see the need to stress it out and emphasise it and say that there are other aspects of learning that do not get the proper attention.” (Participant 17)
Student involvement	12	“Every year we have at least 2 informal meetings with the students and with the representatives of the students and we ask them how comfortable they are, how they think things could change and we do that each semester, and we take their suggestions always into consideration when we plan the next year” (Participant 11)
Autonomy	9	“That's another thing I have a criticism concerning the actual implementation of the bologna process. First of all, it happened before I started. It happened before I started so I wasn't involved in the

		<p>assimilation but after that, there has been no continuous discussion about whether it's been properly implemented or not. So the impression I have is that there was a kind of a pretend implementation and many professors just kept teaching as they would because it's the system here doesn't give a lot of autonomy to the professors.”</p> <p>(Participant 16)</p>
Storage and retrieval of information	9	<p>“first because we have an integrated system, right. We have the university platform, all things integrated, and the students are able to interact directly with the professors through email and through the information that they have on the university platform.” (Participant 6)</p>
Quality	9	<p>“In terms of teaching and promoting knowledge. Yes, I would say that quality is the main goal.”</p> <p>(Participant 13)</p>
Structure	8	<p>“We don’t have formal processes of sharing the information, we have a formal structure in the information, and it ends up being passed through the structure based on the formality of the structure.”(Participant 12)</p>
Goals and plans	8	<p>“We are always learning by this way mainly through identifying our weakness and establishing action plans that are always monitored in the next year and the following semester. We do this at this level and we also do this at the support services level. For example, we ask all the different support services to establish their action plan for the following year and always ask them to report the activities regarding what was planned we ask them at the beginning of the year, we ask them to report their activities and to measure how the actions are established and if they were implemented or not. This is through different</p>

		indicators. And the indicators are always at this level, indicators are found at the teaching and the support services.” (Participant 10)
Leadership behaviour to reinforce learning	6	<p>“There is an effort, from the organisation to support the role of course directors.” (Participant 2)</p> <p>“And many of the professors of the master’s programme are researchers here, and we also encourage professors to share with students their current research and to try to integrate as much their students into their research line and research projects.” (Participant 5)</p>

3.4.2.3. Facilitators of the learning process:

Among this theme, participants have described the facilitators of the learning process. Several sub-categories have been raised in the coding process. Where the most impactful themes are work environment and climate, relationship with colleagues, the openness of teachers, technology, and workshops for reflection (see Table 3.3).

Table 3.3: Facilitators of the learning process.

Theme	No. of Codes	Example
Work environment and climate	11	<p>“One important factor is to have a good work environment, that people can trust each other” (Participant 2)</p> <p>“So, in that way, it's a completely open-access structure. It's open inside the department. Personally, if I know that someone is useful for me in other departments I go and talk to them. That is what I normally do. Sometimes we do not know them until the problem of the department that is that in some cases, we are not aware of everybody. What does that some actions. In fact, last Wednesday the faculty promoted the day without classes. That was to action for interdisciplinary</p>

		activities among science.” (Participant 13)
Relationship with colleagues	8	<p>“I think one of the factors is the close relationship that I was a programme director try to have with the professors.” (Participant 6)</p> <p>“facilitators that I am sure is informality and good relationships among the colleagues” (Participant 7)</p>
Openness of teachers	5	<p>“Well, facilitators are our capability to discuss with old colleagues among ourselves all about any questions that may arise. Some student has some peculiar needs we or we say for him to do to meet that professor or we talk to our colleagues and tried to find a way. For instance, this morning there was a student from another department that wanted to learn a little bit more about my area.</p> <p>So, he was with me and I show him, and I discuss with him the next steps that he should take to be more familiar and more acquainted with my department if that is what he wants. So, we provide a lot of discussion or I would say it's an open structure in terms of dialogue constantly. I have no problems then knocking on anybody’s door and asking something in whatever moment if it is there if it is available, we do it. So there are no limitations in although we had we here we are in different floors but in each floor, we have colleagues of similar areas but in all floors, I don't have any problem and I don't feel any constraint in knocking in everybody's door and asking for help with information in whatever I need.” (Participant 13)</p> <p>“But at the same time, enablers of good things are also persons who are engaged. I do understand what is</p>

		going on. And I will be part of the solution and will be part of the process.” (Participant 12)
Technology	4	<p>“The facilitators are for sure technology and technological evolution” (Participant 6)</p> <p>“The facilitators that we have is the support of our development system team. So, we try to do this. We are always learning and improving. I am here since 2008 and the way we do things now is different from 2008. Basically, because we have a team and the rectory that is interested in developing everything as much as possible automatically. Through the developmental systems, like the platforms that we have. Our academic system, is a digital platform. That is of great support to do this automatically. We do this more automatically. We are reducing the time that different stakeholders are putting in the processes.” (Participant 10)</p>
Workshops for reflection	4	<p>“It would be important if from time to time we could have a seminar at the university about new methodologies and techniques to the learning process, what are the best practices that other universities are doing. Because sometimes I think we are doing the correct thing, but I just know this. I do not know other ways to do it. It is sometimes important to know. We are always attending meetings and seminars where we are presenting our work, but sometimes we need to be students. ”</p> <p>(Participant 8)</p>

3.4.2.4. Barriers to the learning process

The next theme that has been discussed in the interviews is the barriers to the learning process. Participants mentioned the barriers that hinder the learning process in universities. Some sub-categories reported a larger number of codes than the others; these sub-categories are no time

for reflection, learning not in groups, resistance to participate and change, no openness and individual autonomy (see Table 3.4).

Table 3.4: Barriers to the learning process

Theme	No. of Codes	Example
No time for reflection	12	<p>“I think the barriers are professors. As professors are not facilitators. The learning process exists, some have administrative work. And the professors are already fully occupied. And they cannot do more work. So, they stay as the last year. And on the system, the learning process and the summaries are copied from the last year. We don’t think much about the learning.” (Participant 5)</p> <p>“Because it is difficult to have everyone together at the same time, in the same room. That probably would be a barrier.... So sometimes it is difficult to say to schedule a meeting to make this kind of reflection.” (Participant 5)</p>
Learning not in groups	10	<p>“And thirdly, it is connected to the individual measure of our work, we don’t have that much opportunity to work in teams. Because the nature of our work is not that focused-on teamwork. Is much more micro teams or individuals. So, I guess there are these 3 barriers.” (Participant 9)</p> <p>“Barriers are that sometimes we are not framed to learn collectively” (Participant 7)</p>

Resistance to participate 6
and change

“There are situations in which a person reaches a certain level of hierarchy because of professional evolution, but they are not usually the most persons with the highest level of production. Both scientific terms and in leadership due to the act that they have a certain position in the hierarchy, they end up being more resistant. It might not be easy sometimes, to make those persons engaged in the process.... But it is always said that in the past 30 years I’ve done things in a certain way and I don’t want to change. Those are the ones who end up to be trickier. I would not say convinced. But bring them to the processes and make them engaged in part of the solution. So, I would say people are the key 98% and 2% are a little bit more difficult to end. I think it’s a polite way of saying it.” (Participant 12)

No openness 6

“Barriers maybe people are used to working in specific, and maybe it is not easy to have an open mind to see other perspectives and another way to do things.... For example, I come from a more quantitative background and we have several students working on qualitative studies, so basically for me, it was difficult to work on the same topics but with a different point of view. So basically, the habits, the backgrounds that we have may be difficult to surpass in specific terms” (Participant 3)

“I’d say that the major barrier is the peoples’ motivation. In this case it depends on how they think.” (Participant 17)

Individual autonomy	4	<p>“The barriers are you can say too much democracy. So, because that professor has complete autonomy in legal terms. You cannot really tell them you have to teach in this class. OK.... So, if you want to implement something it is either if you are successful at convincing them you have to go to convincing people if you can't convince them they won't do it. They don't have to” (Participant 16)</p> <p>“So, I think that idea of individual autonomy where you cannot tell the teacher what he or she should do. I think it is within the academic culture and I think it is a very significant barrier.” (Participant 4)</p>
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3.4.2.5. Outcomes of the learning process:

The interview included a part to discuss the outcomes of the learning process and what the interviewees think of it. Table 3.5 discusses the significant outcomes of the learning process from the interviewees' point of view. Accordingly, the most significant themes are quality of the learning process, innovation, increase satisfaction, sharing of information, better communication among teachers, improving teaching and programmes, improving the learning process, structured programme and adapting to change (see Table 3.5).

Table 3.5: Outcomes of the learning process

Theme	No. of Codes	Example
Quality of the learning process	14	<p>“You need to know that you are a professional of good quality, but your learning is going to start now. And it’s a cycle. It is important to do research work that is going to complete the cycle, after the research work of the master. I think we are providing high-quality executives and high-quality professionals prepared also to research.” (Participant 8)</p> <p>“The quality of the programmes, because we may adjust our programmes that we propose to our students according to the outputs of our research” (Participant</p>

		3)
Innovation	10	<p>“The good outcome of the learning process is really to define the future of the master’s program and the best way to define it is to increase the number of areas in which our students can go and learn more about these areas as well. So, this can be the best way. So yes, innovation can be the outcome.” (Participant 11)</p> <p>“I think we have to have procedures that allow us to learn and innovate.” (Participant 7)</p>
Increase satisfaction	10	<p>Employees satisfaction: “I think satisfaction with work, so when you share what you are doing that concerns, other people, that share the same interests.... I think that satisfaction increases the likelihood of commitment to what you are doing, more supported and more invested.” (Participant 4)</p> <p>Students’ satisfaction: “The percentage of students that are happy with the way we teach” (Participant 5)</p> <p>“The outcomes can be increasing the number of students and the student’s satisfaction” (Participant 4) we would all get better performance. And we will not spend so much time dealing with stuff that we can do with a simple computer system, that we actually have.” (Participant 9)</p> <p>“Better relationships among teachers in the university” (Participant 18)</p>

Information sharing for 8
better student experience

“When you are establishing dialogues with others, new ideas for research, new ideas for how to structure your lecture and how to assess your students, how to make classes more interesting, how to be more efficient with your bureaucratic work and a lot to learn and share with your colleagues and other people.” (Participant 2)

“That's our task is to provide of course the department but it's basically to provide to the students all the best conditions labs knowledge and even our knowledge and our ways to promote the transfer of knowledge. So, it's making us more robust in terms of better teachers making our disciplines more efficient and making our labs better.” (Participant 13)

Improving teaching and 7
programmes

“The ultimate goal is to improve the way we teach, and the way students learn to have as many students as finishing the degree and writing their dissertation.” (Participant 5)

“Also, I think there should be more training in terms of understanding learning difficulties and disabilities that students may have. That is very poor at the moment here. The way it is implemented is very amateurish. So, any student with learning difficulties is heavily penalised. I am not saying because the teaching is not adapted to their needs and mostly because of ignorance because the professors do not know what learning disability is. It is not low IQ, it's a disability. It is a completely different thing. So yes, I think for a better outcome is. More flexibility in methods of teaching but for that the professors would need more not only training for more supports. This comes about for example who were involved and are

	<p>involved in projects which trying to implement new teaching methods. Example: when you record a video.”(Participant 16)</p>
<p>Better communication among teachers 6</p>	<p>“For instance, yes much better team communication, the things that some people get the information and others don’t. I have this every day as the head of the department there are rules that are emanating from the rector that some of them, I get and some others I do not, and you see this create misunderstandings. Example: Meetings that are adjourned that you do not receive, and people ask why you did not show up. And then I say I did not receive the call for the meetings. So, you see, knowledge flow would be very good, and I guess if this would flow in a very open and simple way, then we will all get better performance. And we will not spend so much time dealing with stuff that we can do with a simple computer system, that we actually have.” (Participant 9)</p>
<p>Improving the learning process 5</p>	<p>“If everyone respects others and if I’m part of the team instead of being head and the ruler and the owner of the team. Just another element of the team, we will work together. If I am the boss of the team, they will wait for my instructions and I do not like that. We try to do it the other way around. Be part of the team, everyone knows of course that there is a dean and then there is a rector and they will end up making the decisions. But if we work together and the team is the aim of it. If we work together, things will happen better and faster.” (Participant 12)</p> <p>“And the improvement of the learning process as well. We are always learning and assuming that we stop here in the time and assume that everything is right. No, we always have time and ways to</p>

		improve what we are doing.” (Participant 10)
Structured programme	4	<p>“Probably better structured programmes, whether it is better articulation among different courses and different teaching practices.” (Participant 15)</p> <p>“The outcome might be to have an organised programme... Maybe we can write a document with recommendations. For instance, I remember a few years ago there was a series of conferences or even a project here at the university on how to integrate teaching with research. Which seems to be a very useful tool for the master’s and PhD programmes.” (Participant 5)</p>
Adapting to change	4	<p>“So, programmes shouldn’t be constant for 10 or 20 years. We need to adjust in terms of different realities and in terms of the evolution of the market.” (Participant 3)</p> <p>“The outcome would be able to defend the future, and that is what makes me interested in the future and what will happen next year. So, we can improve landscape modelling and we should be able to choose our main bets for the future.” (Participant 11)</p>

3.4.2.6. Relationship between organisational learning and team learning:

Regarding the relationship between organisational learning and team learning, the interviewees have mentioned that they barely see a relationship between organisational learning and team learning. The interviewees agreed that it is possible to have a bottom-up relationship between team learning and organisational learning. The highly impactful themes are Rules and procedures, bottom-up approach, low information sharing, interrelation among organisations and passing learning goals to teams (see Table 3.6).

Table 3.6: Relationship between organisational learning and team learning.

Theme	No. of Codes	Example
Rules and procedures	14	<p>“I think at the top level there are procedures that are defined and established, the assessment of teachers also, the specific criteria. And so, I think through those regulations in changing regulation then we feel the need to come together and discuss and make adjustments. When I think about the pedagogical issues that I was mentioning, university supervision, mainly I think they are requirements specific regulations. And then define how we should conduct these processes” (Participant 4)</p> <p>“We individually go to meetings and see these kinds of rules, regulations and we pass to colleagues. But it is completely passive. I mean I have the sense I don’t have time, neither my colleagues want it actually. So, I grab the paper and tell them here is the rule so read it, do act accordingly. So, this is the kind of flowing for instance. So, I get the paper from the rectorate and in a meeting and I say there go the rules, and there it goes act according. So, learning is self-learning. From my experience and see what is involved and then I can complain when I don’t agree with this kind of rules and I write up to the rectorate and say this is not good. And again, it’s a one to one process. So, I don’t have time, neither my colleagues want that I discuss some kind of regulations... For instance, we have new rules for our performance appraisal. So, the rectorate wants to review all the system of performance appraisal. And there was a public document that was for discussion for about a month within the academia. I didn’t read it and I didn’t comment because I didn’t have time. And I can tell</p>

		<p>you that 90 percent of colleagues didn't read it. And this is a big issue, it is your performance appraisal. So, there you have another example. I know some colleagues made comments, normally the colleagues that made comments were the heads of schools and some heads of the department and at that time I wasn't the head of the department, it was another colleague. And I think she made comments. And between these 2 higher levels." (Participant 9)</p>
Relationship between organisational learning and team learning	11	<p>"So, this is the kind of learning, which is no learning at all, it's transmitting information or passing information. Organisational learning is not influencing the team, because again it is passive information that is being passed to you, or if this information is under discussion." (Participant 9)</p> <p>"I think clearly there is a relationship between organisational learning and team learning right!" (Participant 6)</p>
Bottom-up approach	10	<p>"To tell you the truth I guess it's more a bottom-up process. I guess it's the same in other places." (Participant 17)</p> <p>"I don't see many top-down actions. Unless only single or discrete initiatives. So normally is the department that coordinates we did with the professors. They build up disciplines or change or eliminate or create and so on and so that's strong. Working with inside the department... So, we each of us think what is best to teach this subject and so we create that discipline. We make it as better as best as we can. And that is promoted to the departments and then to departments. Create the degree with all those</p>

		and the degree is presented to the faculty. So, I would say it's pretty much from the bottom-up... Normally in most cases is bottom-up" (Participant 13)
Low information sharing	6	<p>"The university doesn't give me some guideline about how to put classes in practice, so I think the micro-levels with those types of situations, that should be correct and equal to different schools. And I don't know exactly if we have guidelines for the learning process, except those that are related to accreditation. So, we agree to have our degrees under conditions to be accredited to follow some guidelines" (Participant 8)</p> <p>"I think there should be more efficient ways to share information and knowledge, around the university, although of course especially in an academic organisation information and knowledge are power... In terms of team building and sharing of information, not so much." (Participant 2)</p>
Interrelation among organisations	5	<p>"It is pretty much related because the group that I'm working with is not just a group of colleagues inside the department. it's a group within a structure very close to rectorship. This means that a lot of what happens is tied to a specific vice-rector in this case who is in charge. So, for instance, as a group we have ideas but then some ideas will have to go through approval. So, it's not about a group of colleagues here, let's write the paper and we don't have to communicate to anyone that we want to do this. But at the sustainability group because it is an organisation wide level of decision and then relates to... For instance, if I want to do something about sustainability at the business school level I'm involved with the dean which is pretty much the right</p>

thing for these areas and executive managers and that's what it's called now formally and they are pretty much into the topic so highly involved and facilitators of them. What I want to say is that the learning that happened at the group level then whenever you want to put it in practice we need to involve the structures because it's sort of a type of learning in actions that or at least some of it that are independent of the organisation.” (Participant 18)

Passing learning goals to 5 teams

“The organisation can influence by imposing the learning goals, and we need to get the evidence that we do it. That is compulsory” (Participant 1)

“And that is part of our strategic plan and we have a strategic plan at various levels. The level of the school that we are in and the level of the university as a whole and they are integrated... So all the learning goals have to come from the more team oriented process as you are saying lead to strategic goals of the institution and the same happens when we have things that are not only from a top-down approach” (Participant 6)

3.4.2.7. Relationship between team learning and organisational learning:

When the interviewer discussed the relationship between team learning and organisational learning, interviewees mentioned that they believed the learning process lay with a bottom-up approach. Few participants believed that the relationship was multi-directional between team learning and organisational learning. The highly impactful themes were: Bottom-up approach, the relationship between team learning and organisational learning, a two-way learning process and the difficulty of communication between different departments in the university (see Table 3.7).

Table 3.7: Relationship between team learning and organisational learning.

Theme	No. of Codes	Example
Bottom-up approach	13	<p>“Yes sometimes, because we complain that we have one meeting per year with the dean of the faculty and the team of the rectorate. And then you can influence them and change the way things are organised. Not learning but more of organisation and complaining and changing things. Yes, it is much more difficult to change things. But it is not completely blocked, we can change things. If it is something, it is a bottom-up approach. The top-down is just some recommendations, please be sure to follow the rules if you can.” (Participant 11)</p> <p>“And in those processes. I think we are all heard at a certain time. As professors we hear the feedback from students, the students are heard by professors. Professors are heard by the head of departments and heads of departments are heard by the head of programmes. And departments and schools are heard by the direction of the university. So that process should be not only top-down but also bottom-up.” (Participant 5)</p>
Relationship between team learning and organisational learning	9	<p>“it’s interesting sometimes I see that we manage to affect much more the upper level, than the upper level affects us.” (Participant 9)</p> <p>“I don’t think this relationship is strong. Of course, all schools collect information at the end of each year about students and professors, but I don’t know exactly if this relationship of team learning of each process to the top if it is strong or not... we give information as best practice if we want to change</p>

		<p>something. I don't think there is a relationship in the meaning that we are doing something really good and then we change everything." (Participant 8)</p>
Two-way learning process	8	<p>"We had to think of the relationship between organisational learning and team learning for some years or now, it is well defined, and it is a bidirectional approach/relationship." (Participant 6)</p> <p>"The way I perceive it, it goes back and forth. Sometimes, with a little bit of a crash in the middle, it happens and sometimes it doesn't flow as quickly as you would like in any way, or you want in both ways but I would say not as a separate approach but end up. I'm talking to you about the team I work with. I don't do anything without consulting them. They don't do anything also without asking me. If this is going in the right direction, we always work together." (Participant 12)</p>
Difficulty of communication between different departments	6	<p>"There isn't much contact between colleagues of different departments and schools within the university." (Participant 2)</p> <p>"This programme is very specific. Because it has professors who are members of the team from different departments in the university. Accounting, finance, human resources, management. And these professors in different departments have different points of view of this programme.... In the programme that is not also easy... From the organisational way, it is difficult to talk to several departments at the same time" (Participant 1)</p>

3.5. Discussion:

The organisational learning process and team learning process in higher education institutions studies are very scarce (Kezar and Holcombe, 2019). So, this study's main goal was to empirically assess the organisational learning process and team learning process in higher education institutions. Previous studies declare that from a theoretical perspective, there are a team (Decuyper et al., 2010) and organisational learning processes in higher education institutions (Ortenblad and Koris, 2014). However, it is not clear what these processes include, and how they are applied and practised in higher education institutions.

Garvin and his team, in 2008, mentioned that the learning process is composed of three building blocks. These building blocks are a supportive learning environment, concrete learning processes, and leadership that reinforces learning. Few studies have explored the theory of Garvin et al., (2008). But the main question of this study remains: How are these processes applied and what are the organisational learning and team learning practices in higher education institutions? Subsequently, building on the notion of Garvin et al., (2008), this study proposed that learning is found on both the organisational and team levels. Moreover, this study proposed that there are processes and practices developed on these levels. Still, previous literature did not empirically support what these practices are, and how these practices are applied in higher education institutions. This study explored this area qualitatively to better understand the practices and the processes. Accordingly, the starting point of this study was to discuss with the participants what the learning processes are, and what the practices are from their perspective.

The results of the study support that the learning processes in universities are found at both the team and organisational levels. The developed findings concur that universities learning processes on the organisational level include a supportive learning environment as a building block. Moreover, the findings of the study declare that the organisational learning process is also one of the organisational learning building blocks.

One of the main findings of this paper was defining the two types of learning within the organisational learning process. The organisational learning process is divided into both formal and informal learning processes. Formal learning processes are described as the sharing of pedagogical practices, the occurrence of formal meetings and feedback. These processes describe how formal learning processes in universities occur. Nevertheless, this study cannot ignore the importance of the informal learning processes that relate to the informal sharing of information in universities. Without these processes, the organisational learning process

would not be complete. Hence, a proposed model is developed for higher education institutions including the new findings (see figure 3.1). The findings are supported by (Kozlowski et al., 2010), who mentioned that formal and informal organisational learning should be aligned within organisations to have better performance. Also, what is significant is that the organisational learning process is affected by the regulations and procedures established in universities by the top level of management.

But what has not been discussed by Garvin et al., (2008) is the learning process at the team level. The findings of the study have supported the involvement of the team level and team learning processes. The findings have supported the concept of learning processes arising from the team level before the organisational level. A supportive learning environment as the first building block of the team learning process is mentioned in the findings of the study (see figure 3.1). This building block is accompanied by communication among the team members with several entities. The findings have mentioned that to have an ongoing team learning process, team members are required to communicate with each other, with heads of departments and with the dean and rector.

As for the second building block (see figure 3.1), which is the actual team learning process on the team level, the team learning process includes sharing of information, storage and retrieval of the learning processes and connecting to the system. Also, the team learning process includes the informal learning process which is an important aspect of team learning in universities. In conclusion, the team learning process must include both types of learning processes. Both the formal and informal learning processes are important aspects to the success of the overall learning process, without negating the importance of either.

Regarding the relationship between team learning and organisational learning, this perspective caught the researcher's interest. This approach has a few suggestions in the previous research (Crossan et al. 1995; Kezar and Holcombe, 2019). This relationship was strongly suggested by the results to be a bottom-up relationship, where the learning process starts first from the team level and then flows up to the organisational level. An example of this is the creation of courses and programmes, where most of the learning processes start from the team members, then these processes are then discussed at the team meeting, and then proposed afterwards to the deans and the rectors. The results also show that there is some influence of the organisational learning process on the team learning process. So, in conclusion, the existence of the learning process among both the organisational and team levels is necessary for higher education institutions.

Participants mentioned that there are few facilitators of the learning process. One of these facilitators is the work environment, which corresponds to what (Barette and Barette, 2007) found. A supportive learning environment supports the occurrence of both team and organisational processes.

On the other hand, one of the major learning barriers mentioned in the results section was not having time to reflect on the learning process. This mainly occurs because teachers in universities have large teaching loads, administrative work and most importantly their research work. Therefore, having time to reflect is quite challenging with all the duties and responsibilities that are required from teachers.

The findings also mention that there are some outcomes of the learning process. These outcomes are known as quality, innovation and increasing the satisfaction of the students and employees.

3.6. Conclusion and future work

In this study, several questions were raised at the beginning and needed answering. The first question was how the organisational learning and team learning processes appear in higher education institutions. This study discussed this point in interviews, where both team and organisational learning processes are needed and are found in higher education institutions. Also, most of the previous research did not shed light on the importance of informal team learning and organisational learning processes in higher education institutions. These two processes were found to be important for the success of both the team and organisational learning processes.

Moreover, throughout this research, the main question was: “Is there a relationship between the team and organisational learning processes in higher education institutions?”. The findings showed that the team learning process is more developed in higher education institutions and is related to the organisational learning processes. The results would suggest the relationship is a bottom-up approach. This means that team learning processes influence organisational learning, and the processes flow to the top.

The change that occurred in higher education institutions during Covid-19 has prompted researchers and academics to also change. In 2020 everything has changed from face-to-face meetings to the necessity of using the internet e.g., Zoom and Skype. These changes also made a difference in the learning process from the academic’s perspective as well. Teams are one of the ways to help organizations face a crisis like the Covid-19

pandemic. But is it the only way? And how can we implement team learning and organisational learning in higher education institutions during and post the pandemic Covid-19?. Accordingly, the researchers of this study recommend reassessing both team learning and organisational learning practices after the occurrence of this change. Also, we started working on this study to assess and recommend the best practices for higher education institutions in this new era.

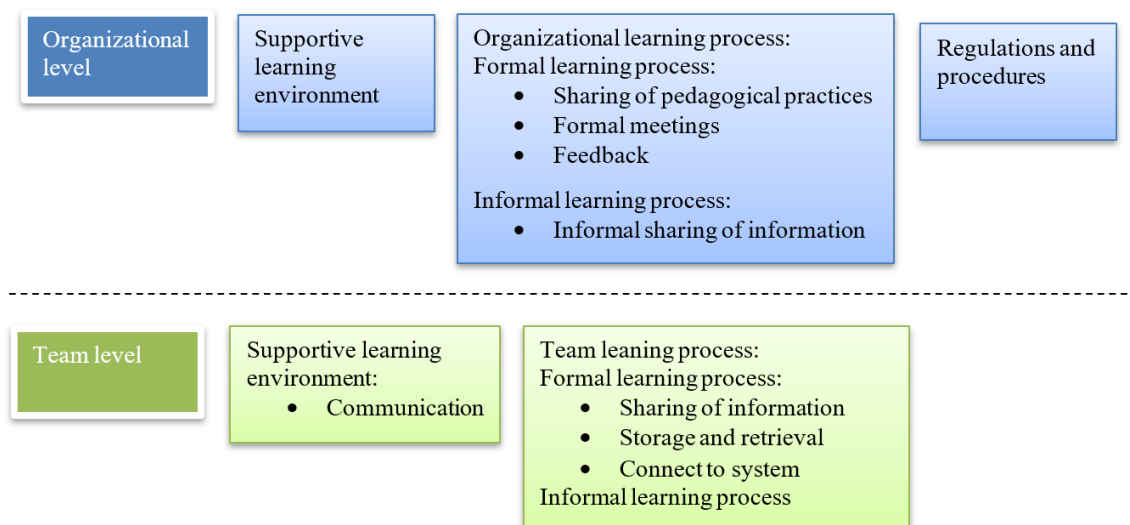


Figure 3.1: New proposed model

Team psychological safety, team leadership and team performance: the mediating role of team learning in universities?

Abstract:

Team learning in organisations has been perceived as key to creating desirable team performance. Particularly, team learning processes may enable team members to learn from each other collectively, allowing them to share and reflect on their ideas freely. This study assesses the relationship between team psychological safety, team leadership and team learning processes, also assessing the relationship between team learning processes and team performance. Moreover, the mediation of team learning processes between team psychological safety, team leadership and team performance. Quantitative data were collected from 95 university teachers using an online survey. The scales were validated using exploratory and confirmatory factors analysis. Two processes are identified concerning team learning processes: co-construction and error communication. The findings support the idea that team learning processes (error communication and co-construction) mediate the positive association between team psychological safety and team performance. Further, our findings indicate a positive relationship between team learning predictors (team psychological safety and team leadership) and team learning processes, and a positive association is indicated between team learning processes and team performance. This article contributes to a better understanding of the relevance of promoting team learning through a model within the university context.

4.1. Introduction

From the beginning of 2020, the whole world has experienced a tragic crisis due to the Covid-19 pandemic that has affected organisations. Hence the pandemic has increased the unpredictability within organisations (Abrantes et al., 2021). Universities have been significantly impacted, as they have had to change their entire activity in a very short period of time. In most countries, classes at universities have become virtual, just as many of the interactions among faculty members. Despite all the changes that had to be implemented at the beginning of the pandemic, universities have managed to continue working. It has been a time that all organisations, specifically health institutions and

universities, have relied mainly on teams to continue working sustainably. Teams have become the main unit in the organisations that help accomplish work (Hirschfeld and Bernerth, 2008; Rodríguez-Sánchez et al., 2021). Also, teams have helped the organisations to adapt faster to the changes that have occurred and cope with the new challenges (Maynard et al., 2015; Ramos-Villagrasa et al., 2019). Universities have changed most of their significant activities to online activities, including teaching activities, departmental meetings, research team meetings and finally, teacher team meetings. Teacher teams are teachers working together for the same course, unit, or department (Koeslag-Kreunen et al., 2020).

In previous research, most of the studies have highlighted team learning as an input or an outcome of an organisational process, but few studies have focused on team learning as a process (Edmondson et al., 2007). Accordingly, this study is focusing on team learning as a process. Team learning is considered an aspect that helps organisations adapt to change (Rico et al., 2020). Therefore, this study focuses on team learning.

Several predictors have been mentioned in previous studies concerning the team learning process such as team communication, team leadership, and team psychological safety (Decuyper et al., 2010). It is suggested that these predictors facilitate the occurrence of team learning. Simultaneously, several outcomes are predicted as outcomes of the team learning process, such as team performance and team success.

Although previously there was a call to assess the team learning process in universities (Decuyper et al., 2010), studies in this area have been scarce until now. An important idea that has not been explored in the literature is to clarify the processes that constitute team learning. While some authors point to team learning as a one-dimensional process, others suggest that team learning includes a set of processes. In this study, we seek to assess which processes are included in team learning in the context of universities. Few studies focus on team learning predictors and the impact of the team learning process on team performance in universities; this is also considered another gap that needs to be filled in the literature about team learning. This study will address the abovementioned gaps. This paper will contribute to team learning research by assessing the team learning processes, predictors, and outcomes in universities empirically. Finally, the study will make a contribution by developing an adapted model concerning the team learning process within the university context.

Our primary research questions for this study are a) What are the team learning processes in universities? b) What is the relationship between the team learning predictors, team learning process, and team learning outcomes?

Accordingly, this study aims to assess the team learning processes in universities. This study also assesses the impact of team leadership and team psychological safety on the team learning process. The effect of the team learning process on team performance will be assessed.

4.2. Literature review

4.2.1 Team learning process

The team learning process is described as an ongoing process of reflection and action that occurs when individual knowledge and experiences are shared and discussed collectively (Edmondson, 1999, Kozlowski and Ilgen, 2006). This process of team learning is characterised by collective thinking (Kasl et al., 1997; Senge et al., 1994), asking questions, discussing errors or unexpected outcomes of actions (Edmondson, 1999; Santos et al., 2015), seeking feedback, experimenting, and reflecting on the process and results (Edmondson, 1999; Ramos-Villagrasa et al., 2019). Edmondson et al. (2007) identify three different areas of research that describe how teams learn. The first area focuses on team learning curves (outcome improvement stream). Team learning curves are known to be impacted by experience and to improve accordingly. The more the team learns over time, the more experience the team retains, and as such, the improvement rate increases. The second area focuses on the relationship between team cognitive systems and team task performance. The second area also focuses specifically on psychological experiments on team member coordination (task mastery stream). Team learning is proposed as the communication and coordination that relies on team members. Team members share knowledge about their team, task, resources, and context. The third area theorises team learning as a group process rather than as an outcome (group process stream). This research focuses on team learning as a group process.

Researchers have discussed the predictors of the team learning process. When human resource researchers have tried to identify which variables are the predictors for the team learning process, several predictors were identified by (Decuyper et al., 2010). These predictors are team psychological safety, team leadership, and team

communication. This research will focus on team psychological safety and team leadership as predictors of the team learning process.

4.2.2. Team learning predictors

4.2.2.1. Team psychological safety

"Team psychological safety is defined as a shared belief that the team is safe for interpersonal risk-taking" (Edmondson, 1999, p.354). Employees feel comfortable expressing their views and opinions in the working team without being marginalised, penalised, or belittled (Garvin et al., 2008). Regarding the education sector, few studies address team psychological safety and its relationship with team learning. Subsequently, this study is going to assess team psychological safety in universities and its relationship with team learning.

Previous studies have mentioned the positive relationship between team psychological safety and team learning (Harvey et al., 2019; Sanner and Bunderson, 2015). This relationship has been significant in several areas such as the: marketing, project management, information technology and pharmaceutical sectors (Harvey et al., 2019). Decuyper et al. (2010) mention that team psychological safety is a predictor of team learning. Also, Edmondson (1999) discussed the importance of the concept of team psychological safety to team learning as team psychological safety helps team members to feel safe expressing their shared beliefs and taking interpersonal risks. Later, team psychological safety helps the team learning process to occur (Harvey et al., 2019). Subsequently, this study is going to assess team psychological safety as a predictor of the team learning process. The following hypothesis is posited:

H1: there is a positive relationship between team psychological safety and team learning.

4.2.2.2. Team leadership

Team leadership behaviours refer to the processes of influencing and facilitating, that is, "influencing others to understand and agree about what needs to be done and how it can be done effectively; (...) facilitating individual and collective efforts to accomplish a shared objective" (Ensley et al., 2006; in Koeslag-Kreunen et al., 2017, p.195).

Previous research has focused on team leadership functions. Team leadership functions enhance team effectiveness, team performance, and satisfy the team's needs (Moregson et al., 2009). One of the team leadership functions that focus on actions is encouraging team self-management. Team self-management supports the idea that a team manages itself by resolving its problems and attaining its tasks without seeking

expertise from outside of the team (Morgeson et al., 2009). The idea of encouraging self-management as a leadership function is rooted in social learning (Bandura, 1977; Morgeson et al., 2009). Leadership has often been recognised as an essential factor in facilitating processes such as team learning behaviour in higher education (Bryman 2007; Kouzes and Posner, 2019 in Koeslag-Kreunen et al., 2020). Previous researchers have mentioned that a team member that engages in team learning without the engagement in team leadership might cause problems; subsequently, they have called for the involvement in team leadership to result in successful team learning (Van der Haar et al., 2017; Koeslag-Kreunen et al., 2018). Koeslag-Kreunen et al. (2020) focused on leadership styles; however, this present research focuses on team leadership as an action.

Wang et al. (2017) described shared leadership as "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both" (Pearce and Conger, 2003, p. 1). They proposed a positive association between shared leadership and team learning behaviours. However, their study focused on team learning behaviour and not the team learning processes. Accordingly, our study will assess the relationship between shared leadership and team learning process. The following hypothesis is posited:

H2: there is a positive relationship between team leadership and team learning

4.2.3 Team learning outcomes

4.2.3.1 Team performance

Team performance indicates the entire team's evaluation in terms of its task accomplishments, instead of the team members' individual performance within the situation (Man and Lam, 2003; Savelsbergh et al., 2009) and the learning process. Here, in this study, team performance refers to assessing team members' performance within the learning team. Previous research suggests that there is a relationship between team learning behaviours and team performance (Argote et al., 2001; Edmondson, 2002; Lutz, 1994; Schippers et al., 2003; Savelsbergh et al., 2009; Santos et al., 2016; Van den Bossche et al., 2006). However, few studies have assessed team performance in the university context and even fewer studies have evaluated the relationship between team learning and team performance in the university context (Decuyper et al., 2010). Therefore, this study is focused on the relationship between team learning and team performance in the university context.

H3: there is a positive relationship between team learning and team performance

4.2.4. Mediation of the team learning process in the relationship between team leadership and team psychological safety and team performance.

This study proposes a relationship between the predictors of the team learning process and the team learning outcomes, where team leadership and team psychological safety impact on team performance through the mediation of the team learning process. However, few studies have assessed these mediation relationships in the university context.

Several studies have mentioned team learning mediation in the relationship between team psychological safety and team performance (Edmondson, 1999; Kim et al., 2020; Savelsbergh et al., 2009). Decuyper et al. (2010) proposed the mediation of the team learning process in the relationship between team leadership and team performance. Since few studies have assessed the mediation of the team learning process in the relationship between team learning predictors and team learning outcomes, this study examines the mediation of the team learning process between team learning predictors and team performance.

H4: there is an indirect positive relationship between team psychological safety and team performance mediated by team learning

H5: there is an indirect positive relationship between team leadership and team performance mediated by team learning.

Proposed model

Based on the literature review, Figure 4.1 presents the proposed model for the study.

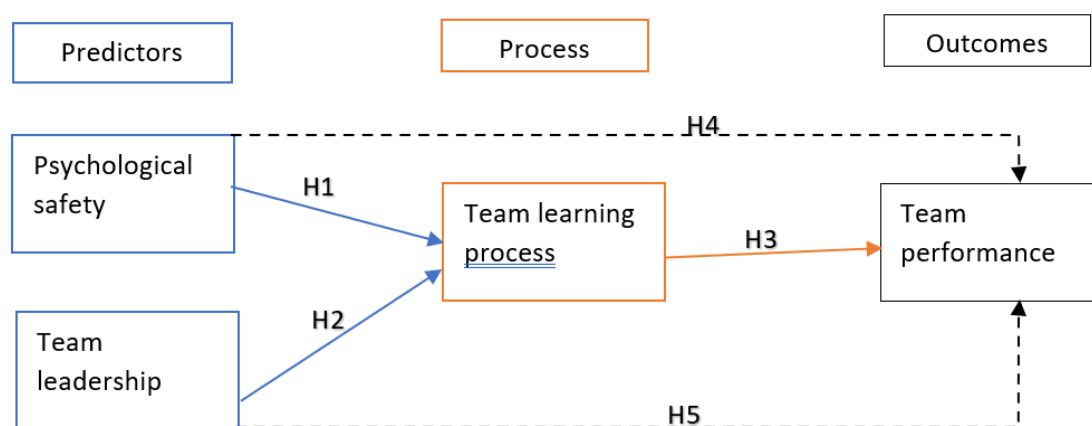


Figure 4.1: Theoretical model

Note: Hypotheses on dashed lines represent hypotheses with the inclusion of mediating variables.

4.3. Methodology

4.3.1. Data collection and sample

Data were collected via an online questionnaire developed from the literature. After building the questionnaire, two academic experts in the field of Organisation behaviour and human resources management revised the final questionnaire. The experts suggested modifications that were taken into consideration. Afterwards, the questionnaire was translated from English to Portuguese and went through the back-translation technique that is recommended by (Saunders et al., 2019). The questionnaire was developed on Qualtrics, and an anonymous link was sent to the respondents. The researchers sent the questionnaire to 2,583 university teachers. The university teachers are from different faculties and departments, including faculties of business, psychology, science, and engineering. The researchers received 95 complete questionnaires. The questionnaires were sent to 10 Portuguese public universities.

The sample included professors who were part of teacher teams. Also, the sample included heads of the programs in the universities. The sample is composed of 49.5% assistant professors, 25.3% associate professors, 7.4% full professors, 16.8% invited assistant/associate/full professor and 1% lecturer and assistant. Also, the majority of the sample (87.4%) has worked more than 7 years in the same university and more than 5 years in the same team (83.2%). As for the work status of the participants, 57.9% were on a full-time basis, and the majority of the sample included 53.7% females. The survey was conducted from April 2020 till October 2020. Two reminder emails were sent to the respondents. The survey was performed using a random sample of respondents from the universities. Among the 115 respondents surveyed, 20 respondents whose answers were not complete were excluded. The questionnaire started with a question asking for the participant's consent. It is indicated at the beginning of the questionnaire that the participant needs to consider their team, unit or department while responding to the questionnaire. This is because the questionnaire is intended to collect the participants' perceptions regarding several independent and dependent variables at the team level.

4.3.2 Measures

The team learning scale, Savelsbergh, (2009) was used. The team learning scale is divided into 6 sub-dimensions, which are the: co-construction of meaning, exploring different perspectives, error analysis, error communication, feedback seeking behaviour and experimenting. Team learning is measured with 21 items. For the team learning

scale, all the 21 items were scored on a 7-point Likert scale (1 = totally disagree, 7= totally agree). An example of the items is: “Information from pedagogical Team/department/unit members is complemented with information from other team members.”

The preliminary analysis includes analysing team learning (Savelsbergh, 2009) using exploratory factor analysis (EFA) and then confirmatory factor analysis (CFA). Since these sub-dimensions are not replicated in other studies, this study assesses this scale in universities to validate it. As the sub-dimensions are measured using an adapted scale, running a factor analysis for the items of each sub-dimension separately would be inappropriate. Therefore, we conducted an EFA of all items for team learning processes. We conducted a principal component exploratory factor analysis using varimax rotation.

The extraction of the factors was performed using Exploratory Factor Analysis (EFA) with the weighted least squares factoring method. The varimax transformation was used. The cut off for the items' loadings was (.50) and the difference between the factor loadings should be higher than (.30). The final EFA is presented in Table 4.1. Based on this criterion, we removed 12 items and kept 9 items that represent co-construction and error communication.

The results are shown in Table 4.1. The results show two factors with eigenvalues greater than one, explaining 74.86% of the variance, corresponding to the subscales identified by (Savelsbergh, 2009). Also, the KMO test showed a value of (.91) and Bartlett's Test is significant ($P < .05$). Co-construction and error communication are the ones with the highest values.

Table 4.1: Team learning items and items’ EFA loadings.

Items	1	2
Errors are discussed openly.	.905	.331
In our pedagogical Team/department/unit, mistakes are discussed among each other.	.893	.330
After an error has occurred, it is analysed thoroughly in this Pedagogical Team/department/unit.	.887	.328
We discuss errors within our Pedagogical Team/department/unit, because errors and their solutions can deliver important information.	.872	.359
Pedagogical Team/department/unit members communicate	.869	.388

their mistakes, to prevent others from making the same mistake.		
Information from pedagogical Team/department/unit members is complemented with information from other team members.	.207	.917
Pedagogical Team/department/unit members collectively draw conclusions from the ideas that are discussed in the team.	.412	.857
Pedagogical Team/department/unit members elaborate on each other's information and ideas.	.405	.830
If something is unclear, we ask each other questions.	.402	.781

In the next step, we used CFA to test a first-order model. Specifically, we checked whether CFA confirms the results of EFA. The results show acceptable fit indices, with $c2/df = 1.46$; comparative fit index (CFI) = .98; Tucker–Lewis index (TLI) = .98; root mean square error of approximation (RMSEA) = .07 and standardized root mean square residual (SRMR)=.37. All factor loadings are significant ($p < .05$) and indicate adequate factor loadings.

The results show that the indicators: (1) co-construction and (2) error communication are relevant to measure the team learning processes in universities. Finally, we checked the scales' internal consistency to measure these indicators by calculating Cronbach's alpha. The results indicate strong scale reliability for both co-construction (.94) and error communication (.97).

Team leadership scale is composed of team self-management scale Morgeson et al. (2009). Team leadership is measured using 6 items. All items were scored on a 7-point Likert scale (1 = totally disagree, 7= totally agree). An example of the items is: "Encourages the team/unit/department to be responsible for its own affairs". We used CFA to test a first-order model of team self-management. The results show acceptable fit indices, with $c2/df = 6.2$; CFI = .929; RMSEA = .23 and SRMR=.05. All factor loadings are significant ($p < .001$) and indicate strong factor loadings. The items were reduced from 6 to 5 items. Afterwards, the scale revealed good reliability (Cronbach alpha= .91).

The team psychological safety scale was assessed using Garvin et al. (2008). Garvin et al. (2008) used 5 items. All items were scored on a 7-point Likert scale (1 =

totally disagree, 7= totally agree). An example of the items is "In this unit/team/department, it is easy to speak up about what is on your mind." Exploratory factor analysis was conducted concerning this scale (see table 4.2), after it was adjusted only 4 items are used to assess team psychological safety in universities. The results of the EFA are shown below and then scale reliability is conducted revealing good reliability (Cronbach alpha=.87). Also, the result of the KMO test is (.81) and Bartlett's Test is significant (P<.05)

Table 4.2: Team psychological safety items and items' EFA loadings

Items	Initial	Extraction
In this unit it is easy to speak up about what is on your mind	1.00	.76
People in this unit are usually comfortable talking about problems and disagreement	1.00	.81
People in this unit are eager to share information about what doesn't work as well as what does work	1.00	.84
Keeping your cards close to your chest is the best way to keep ahead in this unit ®	1.00	.51

In order to assess team performance, the Man and Lam (2003) scale was used. Team performance is measured using 5 items. All items were scored on a 7-point Likert scale (1 = totally disagree, 7= totally agree). An example of the items is: "Our pedagogical Team/department/unit continuously improves job efficiency." The scale revealed good reliability (Cronbach's alpha=.94).

4.3.3. Data analysis

We tested our hypotheses with the statistical software IBM SPSS Statistics Suite, version 27, using the PROCESS macro by Andrew Hayes (2013) to test the mediation hypothesis and the direct effects.

4.4. Results

4.4.1. Hypothesis testing

Table 4.3 provides the means, standard deviations, and correlations for all the variables in the study.

Table 4.3: Descriptive statistics and correlations

	Mean	Standard deviation	1	2	3	4
1-Team psychological safety	4.64	1.48				
2-Team self-management	4.85	1.27	.71**			
3-Co-construction	5.21	1.35	.59**	.63**		
4-Error communication	4.34	1.77	.75**	.76**	.69**	
5-Team performance	5.03	1.21	.67**	.68**	.52**	.72**

n=95, **. Correlation is significant at the 0.01 level (2-tailed).

The findings support H1, where there is a strong positive significant relationship between team psychological safety and co-construction ($r = .59, p < .01$), there is also a strong positive significant relationship between team psychological safety and error communication ($r = .75, p < .01$). We tested the direct effects of team psychological safety on team learning processes (co-construction and error communication). Consistent with our hypothesis the results of the ordinary least square (OLS) regression analysis revealed a positive effect of team psychological safety and co-construction ($\beta = 0.993, p < .01$); there is also a positive effect of team psychological safety and error communication ($\beta = 0.900, p < .01$).

The findings also corroborate H2, where there is a strong positive significant relationship between team leadership and co-construction ($r = .63, p < .01$), there is also a strong positive significant relationship between team leadership and error communication ($r = .76, p < .01$). Consistent with our hypothesis the results of the OLS regression analysis revealed a positive effect of team leadership and co-construction ($\beta = 0.679, p < .01$); there is also a positive effect of team leadership and error communication ($\beta = 1.062, p < .01$).

The results support H3 too, where there is a positive significant relationship between co-construction and team performance ($r = .52, p < .01$), there is also a strong positive significant relationship between error communication and team performance ($r = .72, p < .01$). Consistent with our hypothesis the results of the OLS regression analysis

revealed a positive effect of co-construction and team performance ($\beta = 0.325, p < .01$); there is also a positive effect of error communication and team performance ($\beta = 0.327, p < .01$).

This study tested mediation hypotheses 4 and 5 using Hayes (2013). Macros were developed to assess the mediation analysis of the models on SPSS. Macros helped estimate the indirect effect with a bootstrap approach (Cole et al., 2008).

H4 was corroborated; the team psychological safety variable has an indirect effect on team performance mediated by team learning processes (co-construction and error communication). Firstly, team psychological safety has an indirect impact on team performance mediated by co-construction ($IE = .32$). The indirect effect is statistically significant 95% CI [.09, .62]. Team psychological safety also indirectly affects team performance mediated by error communication ($IE = .30$); the indirect effect is statistically significant 95% CI [.16, .44].

As for H5, team leadership has a partial indirect effect on team performance mediated by team learning processes (co-construction and error communication). Team leadership has an indirect effect on team performance mediated by error communication ($IE = .34$); the indirect effect is statistically significant 95% CI [.18, .52]. But co-construction did not mediate the relationship between team leadership and team performance as it is statistically insignificant. Table 4.4 shows the summary of the tested hypotheses results.

Table 4.4: Summary of tested hypotheses results

Hypotheses	Results	Correlations, regressions, and mediation analysis
H1: there is a positive relationship between team psychological safety and team learning	Supported	Team psychological safety and co-construction ($r = .59, p < .01$), ($\beta = 0.993, p < .01$). Team psychological safety and error communication ($r = .75, p < .01$), ($\beta = 0.993, p < .01$)
H2: there is a positive relationship between team leadership and team learning.	Supported	Team leadership and co-construction ($r = .63, p < .01$), ($\beta = 0.679, p < .01$) Team leadership and error communication ($r = .76, p < .01$), ($\beta = 1.062, p < .01$)
H3: there is a positive	Supported	Co-construction and team

relationship between team learning and team performance		performance ($r = .52$, $p < .01$), ($\beta = 0.325$, $p < .01$) Error communication and team performance ($r = .72$, $p < .01$), ($\beta = 0.327$, $p < .01$).
H4: there is an indirect positive relationship between team psychological safety and team performance mediated by team learning	Supported	Co-construction (IE=.32) & statistically significant 95% CI[.09,.62]. Error communication (IE=.30) & statistically significant 95% CI[.16,.44].
H5: there is an indirect positive relationship between team leadership and team performance mediated by team learning.	Partially supported	Error communication (IE=.34) & statistically significant 95% CI[.18,.52].

4.5. Discussion, conclusion, and future work

4.5.1. Discussion and Conclusion

This study examines the team learning process in universities. It also examines the relationship of team leadership and team psychological safety with team learning processes within the university sector. Further, this study examines the impact of team learning processes on team performance. The impact of team leadership and team psychological safety on team performance mediated by team learning processes was also analysed. The literature showed a lack of studies on team learning processes within the context of universities. Where little is known about the most suitable team learning process for this particular context. Few studies have addressed the relationship of team learning predictors such as team leadership and team psychological safety on the team learning process, as well as the impact of team learning processes on team learning outcomes as team performance.

Our results show that the most suitable processes for team learning in the context of universities are co-construction and error communication. We believe our results contribute to the literature by confirming and extending prior findings in several ways. Our findings support the existing literature as they suggest that team psychological safety has a positive relationship with the team learning process and is considered a predictor of the team learning process (Harvey et al., 2019). Moreover, this study supports the consideration of team psychological safety and that it is a predictor of the

team learning processes within universities. These findings show that the safer the teams of teachers in universities feel, the more the team learning processes are facilitated.

Our data support the previous research that mentions the positive association between team leadership and team learning (Pearce and Conger, 2003). This study goes beyond previous studies because it focuses on team leadership as an action. Teacher teams work together to resolve their problems and complete their task without the need for external expertise. The hypothesis of a positive relationship between team leadership and team learning processes is supported. This positive relationship was expected as teachers always value autonomy in their work, where the team will work together without the need for external contributors. Our findings showed that the more team leadership actions occur in universities, the better the team learning processes are.

The relationship between team learning processes and team performance is supported in this study, substantiating previous studies' results and calls (Argote, 2001; Decuyper et al. 2010). Universities need to capitalise on team learning processes to increase their team performance. A positive relationship between team learning processes and team performance was found. Our findings agree with previous research results. It shows that universities need to focus on the learning aspect of teacher teams as it results in better team performance and better effectiveness of teacher teams.

This study contributes to the literature by providing evidence of the full mediation of team learning processes between team psychological safety and team performance. This finding supports other studies (Kim et al., 2020; Savelsbergh et al., 2009; Edmondson, 1999). Moreover, our results show that the relationship between psychological safety and team performance is improved when mediated by the team learning process in universities. When teacher teams induce psychological safety, the teacher feels safe to share his/her feelings and ideas at their teams' meetings. When teacher teams generate learning processes such as co-construction of meaning and error communication, team performance increases. For example, during COVID-19 and the full transformation to online classes: this happened when a teacher felt safe to share his/her ideas regarding the new structure of delivering the online classes and accordingly worked on developing the new ideas with his or her team to construct the teaching methods, syllabus and content of the course. If any problems occurred concerning communication with students through the online platforms, the teacher felt safe to communicate this if the team promoted psychological safety. The teacher team

discussions resulted in the development of the best practices for the new teaching methods and better team performance. This investigation assesses the mediation of team learning process between team leadership and team performance. It focuses on team leadership's action where the teams resolve their problems and fulfil their tasks, and then the occurrence of team learning processes helps to encourage better team performance. Decuyper et al., (2010) assumed the mediation of team learning between team leadership and team performance. Our findings partially support this assumption. Our results show that only error communication, as one of the team learning processes, mediates the relationship between team leadership and team performance.

Finally, this study has created a suitable model to assess the team learning process, team learning predictors and team learning outcomes in universities (Figure 4.2). This study contributes to the theory of team learning. It shows a newly adapted model of team learning predictors, team learning as a process and their influence on team learning outcomes. This new adapted model may be considered novel because it states the team learning predictors, processes, and outcomes.

4.5.2. Implications for practice

This research serves various educational fields in universities such as: business, engineering, mathematics, and technology. It points to the importance of team learning processes in universities and their application in departments, teacher teams and research teams regardless of the school or research type. This research supports the better performance of the teams in universities through the application of learning in teams. Also, team leaders should consider the importance of team leadership and support the teams' psychological safety to acquire better team performance.

To foster a team's psychological safety, heads of the department or teacher team leaders could motivate and encourage the sharing of ideas and openness among the team members. Also, team leaders should support the team to solve their problems together by promoting team self-management without the interference of external members. As for team learning processes, team members should capitalise on communicating the ideas, thoughts, and problems they have. On the other hand, the team leader should support transparent communication among the team members. When working on these abovementioned aspects, team performance is expected to increase.

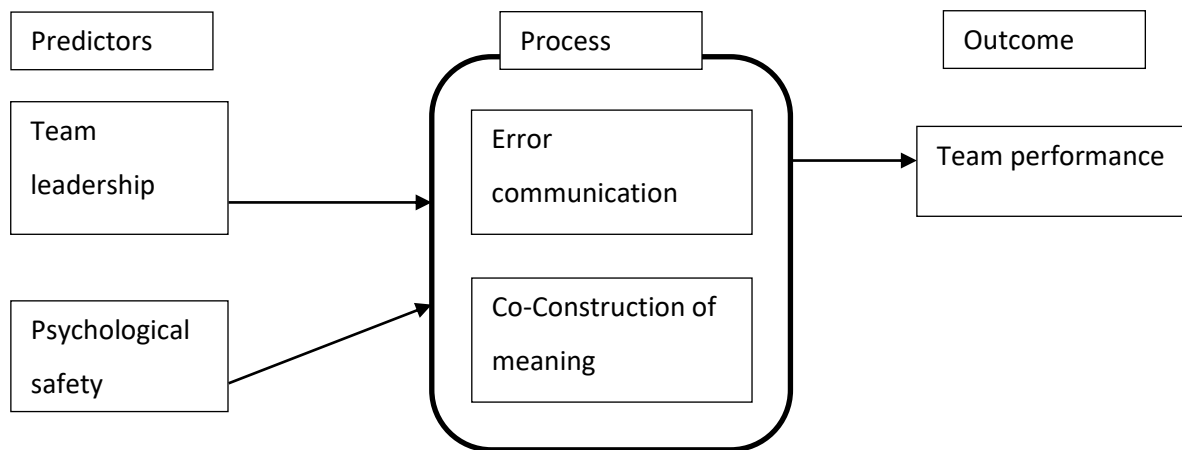


Figure 4.2: New proposed team learning model

4.5.3. Limitations and future research

This study has two limitations. The first is the need for more teams to join the assessment of the new proposed model in the university context. Since the team learning processes, team learning predictors and team learning outcomes are important for the effectiveness of the universities, and few studies focused on it. In future research, it will be important to evaluate team learning model with more teams from different universities.

The second limitation is that the assessment of the processes is better evaluated over time (Harvey et al., 2019), specifically post covid time. The more the team interact over time, the more the team learning increases and more understanding of the team learning processes is observed. Although our findings are valuable to team psychological safety, team leadership, team learning processes and team performance; future research needs to assess the team learning model using a longitudinal time series to better understand team learning processes in the university context. A longitudinal design that includes team psychological safety, team leadership, team learning processes, and team performance could give more weight to the understanding of team learning literature in the university's context. A whole academic year could allow a better understanding of the process.

Learning in universities: an empirical study.

Abstract

Organisational learning is one of the ways recommended to attain better organisational performance and universities are no exception. Remarkably, the organisational learning process helps universities to learn and generate new knowledge, skills, and abilities. This study assesses the relationship between the organisational learning culture and organisational learning process and whether these processes are associated with university performance. We collected 95 questionnaires from university teachers to test the hypotheses. University rankings were also used to measure university performance objectively by aggregating the individual responses to the university level. Findings support the positive association between team learning and organisational learning. Also, a positive relationship between the organisational learning culture and organisational learning, as well as a positive relationship between organisational learning and university performance were found. Moreover, the results show that the organisational learning process is a mediator that elucidates the positive association between organisational learning culture and university performance. The study contributes to a better understanding of organisational learning in universities. This study reproduces an organisational model within the context of higher education.

5.1. Introduction

As mentioned at the world economic forum in 2021 “COVID-19 has been a huge challenge for higher education – but universities can learn from this challenge to improve learning and teaching for the future.”. Accordingly, universities need to adapt and change to remain able to function effectively, by capitalizing on the learning process. In the meantime, teaching needs more innovative teaching methods, as the sudden switch to online learning has been difficult for teachers and students (world economic forum, 2021). Organisational learning helps universities to adapt to the change and increase their performance (Kezar and Holcombe, 2019).

The topic of organisational learning became a central research topic in the early nineties, where the foundations of organisational learning were developed further during this era (Castaneda et al., 2018). The theories of organisational learning developed in the nineties were initiated by Argote and Epple (1990) and explained learning curves later Huber developed organisational learning constructs in 1991 to better explain the organisational learning processes. Until this time researchers had found this

phenomenon challenging to explain and had always called for more research to understand organisational learning. Organisations learn when there is an information processing that leads to a change in the behaviour and the acquisition of knowledge, skills, and abilities (Flores et al., 2012; Huber, 1991; Jiménez and Sanz, 2006; Jyothibabu et al., 2010; Kezar and Holcombe, 2019; Slater and Narver, 1995). A significant body of research highlights the importance of organisational learning practices and processes as they can facilitate change and enhance organisations (Argyris and Schön 1996; Fiol and Lyles 1985; Garvin 1993; Huber 1991). Previous research has discussed organisational learning in several industries, but it is considered scarce in the university context (Abu-Tineh, 2011; Voolaid and Ehrlich, 2017). Most previous research focused on organisational learning capabilities and behaviours. But the present study will focus on organisational learning processes. Organisational learning researchers have extended their research to identifying organisational learning predictors and outcomes. Some researchers have mentioned leadership and decision-making as predictors of organisational learning (Flores et al., 2012), and performance as an outcome of the organisational learning process (Jyothibabu et al., 2010). Also, Edmondson (2002) stated that team learning influences organisational learning.

Organisational learning processes affect performance in organisations (Bontis et al., 2002; Crossan and Bapuji, 2003; Kontoghiorghes et al., 2005; Sun et al., 2008; Jyothibabu et al., 2010). However, this relationship in the university sector is understudied, where there is a gap in organisational learning literature. Another gap concerns which organisational learning predictors affect the organisational learning process and university performance, as little research has been done in this area. Subsequently, more gaps have emerged, such as what the organisational learning processes relevant to the university context are and identifying these processes from an organisational perspective.

This study will focus on assessing the organisational learning process in universities and, further, study the multidimensionality of the organisational learning construct in universities. This study will focus on understanding the organisational learning culture as a predictor and how it impacts on the organisational learning process and university performance. It also assesses the relationship between the organisational learning process and university performance and highlights the relationship between the team learning process and organisational learning processes, where the team learning process is considered an antecedent to organisational learning. There is very little or no

data concerning this relationship in the literature; there is definitely a need to assess this relationship empirically. Further, this research assesses the mediation between the antecedents of the organisational learning process and its outcome. Consequently, this research proposes a model adapted to organisational learning in the university context.

5.2. Literature review

5.2.1. Organisational learning process.

Most scholars agree that organisational learning is known as the change in organisational knowledge, which is acquired through practical experiences (Argote and Spekter, 2011). Organisational learning focuses not only on intentional learning but also on unintentional learning in the organisation (Huber, 1991). Intentional learning is the main process for scientists and educators. Where researchers often think of it as an intentional process directed at improving effectiveness. While unintentional learning is proposed as unsystematic learning (Huber, 1991). Although previous research has focused on organisational learning as an outcome or as a culture, few have discovered the processes of organisational learning (Pham and Tran, 2016). This research, therefore, focuses on the organisational learning process due to the scarcity of research in this area. Huber (1991) suggested that organisational learning includes four processes. The processes are: information acquisition, knowledge dissemination, shared interpretation, and organisational memory (Huber, 1991; Santos-vijande et al., 2012).

The process of information acquisition is about acquiring information from different sources either internally or externally (Huber, 1991; Flores et al., 2012). The internal, is gathered from inside the organisation and from the creator of the company, or from previously acquired experience. As for the external, it is gathered from the competitors and the marketplace, through acknowledging and acquiring the implicit analysis of the actions of the competitors. On other occasions, companies look for the best practices, and they solve the problems by identifying key tendencies, collecting external information and comparing their performance with the competitors (Santos-Vijande et al., 2012).

Shared interpretation mainly relies on analysing the information from a global point of view. Therefore, the information available and how to use it is a priority for the organisation (Santos-Vijande et al, 2012). Also, organisations develop shared mental models, and the help of strong communication tools foster shared interpretation. Moreover, another factor that is involved in the development of information is the examination and assessment of the current mental models that are found in the

organisation. Where organisations need to check whether the information available is correct and need to assess the stored knowledge and reject obsolete and ambiguous beliefs or data, that affect the decision-making process in the organisation (De Holan and Phillips, 2004; Santos-Vijande et al, 2012). “Information interpretation helps reduce equivocality and thus is important for developing shared understanding that leads to organisational learning” (Daft and Weick, 1984; Flores et al., 2012).

Concerning organisational memory; since collective learning is always a part of organisational learning, then it is automatically connected to organisational memory. Organisational memory shows all the knowledge that the organisation collects during both processes of information acquisition, and shared interpretation (Flores et al., 2012; Santos-Vijande et al., 2012). This process depends on adequate storage of knowledge so the individual can easily retrieve the information over time (Argote et al., 2003; Flores et al., 2012; Santos-Vijande et al., 2012). It is important to have organisational memory (Cross and Baird, 2000; Santos- Vijande et al., 2012), to ensure that the rotation of staff will not lead to the loss of information, the same as the turnover of personnel (Flores et al., 2012; Levitt and March, 1988). The process of organisational memory focuses on several processes, such as the encoding, storing and retrieval of knowledge (Flores et al, 2012), so it's not just an object as some scholars have proposed previously (Argyris and Schon, 1978). In this research we follow the notion of (Flores et al., 2012) that sees organisational memory as a process that consists of the mechanisms, functions or actions that organisations have or take to help with the encoding, storing and retrieving the previous experience that the organisation has gained.

Knowledge dissemination is a process that takes place through formal (e.g., departmental meetings, discussion of future needs, and cross-training) and informal interactions among individuals (Koffman and Senge, 1993). The creation of formal networks and databases encourages communication by guaranteeing both the accuracy and the rapid dissemination of information. These initiatives need more informal exchange mechanisms to complement them so that any tacit knowledge that individuals gather is transformable into explicit knowledge. Researchers perceive organisational learning as either an organisational process or an organisational capability. Organisational capability is described as the organisational and managerial characteristics that facilitate the organisational learning process or allow an organisation to learn (Aragón et al., 2014; Chiva et al., 2007; Tohidi et al., 2012). In the present study, organisational learning is viewed as a process that occurs inside the organisation

on an organisational level. Organisational learning as a process focuses on the actions that occur in the organisation to help in the learning process. In the university context, researchers have called for more studies to understand the organisational learning process (Abu-Tineh, 2011). Further, more research is needed to understand the multidimensionality from an aggregated perspective.

5.2.2. Organisational learning culture

Organisational learning has various predictors that have been mentioned in previous studies. Predictors that influence organisational learning are knowledge sharing behaviour (Park and Kim, 2018) and goal orientation (Chadwick and Raver, 2012). Moreover, Flores et al., (2012) relate that: participative decision-making, openness, learning orientation and transformational leadership are proposed as predictors of organisational learning. Flores et al., (2012) also mentioned that these predictors are part of the culture, whereas organisational learning culture is considered to be a predictor that should be assessed in relation to organisational learning. Consequently, our study will focus on organisational learning culture, as it is essential for organisational learning, and it is a more general predictor. Also, Pham and Tran (2016), recommend that more predictors having a positive influence on organisational learning should be explored. Organisational culture is a factor that facilitates organisational learning (e.g. Ahmed et al., 1999; Campbell and Cairns, 1994; Conner and Clawson, 2004; Maccoby, 2003; Marquardt, 1996; Marsick and Watkins, 2003; Pedler et al. 1997; Rebelo and Gomes, 2011). Organisational learning culture is described as the values, beliefs and assumptions that emphasise the creation of collective learning in an organisation (Sorakraikitikul and Siengthai, 2014). Researchers have proposed the importance of an organisational learning culture as it creates a supportive environment; it enables and influences learning and knowledge sharing at the individual, team, and organisational levels (Kontoghiorghes *et al.*, 2005; Marsick and Watkins, 2003). Despite the importance of organisational learning culture in the literature (e.g. Marquardt, 1996; Pedler et al., 1997), there is still a lack of research specifically concerning learning culture (Rebelo and Gomes, 2011) and its relationship with organisational learning. There is also a lack of research addressing this relationship in the university context.

Since Flores et al. (2012) findings showed the positive relationship between participative decision-making, openness and leadership and organisational learning, they considered these predictors as part of the organisational culture. Therefore, we

expect a positive relationship between organisational learning culture and organisational learning. In this study, we will explore the relationship between the organisational learning culture and organisational learning process (organisational learning culture as an antecedent) in the university context. Accordingly, we hypothesised:

H1: there is a positive relationship between the organisational learning culture and organisational learning process.

5.2.3. Organisational performance

Performance has been mentioned as an outcome for organisational learning in several studies (Aragón et al., 2014; Mohammad, 2019). The organisation's performance in general, depends on the achievement and the progress of strategy identified by the organisation (Davies and Walters, 2004; Mohammad, 2019). Performance needs to meet the organisational strategies and the organisational goals, because it shows whether this organisation is successful or not. This research focuses on university performance.

Little research has focused on assessing the relationship between organisational learning and organisational performance so far (Bontis et al., 2002; Crossan and Bapuji, 2003; Jyothibabu et al., 2010; Kontoghiorghes et al., 2005; Sun et al., 2008). Some previous empirical studies proposed the positive influence of organisational learning on organisational performance (Aragón et al., 2014; Mohammad, 2019). According to previous research, organisational learning helps to improve the performance of an organisation.

Most of the previous research has focused on the relationship between organisational learning capabilities and performance (e.g., Camps and Luna-Aroca, 2012; Hurley and Hult, 1998; Keskin, 2006; Rhodes et al., 2008). But the present study focuses on organisational learning as a process, not as a capability, and its impact on university performance. In the context of universities, few empirical studies have shown the positive relationship between organisational learning and university performance (Guță, 2014; Pham and Tran, 2016). Guță, 2014 didn't assess the relationship empirically and Pham and Tran's (2016) study assessed university performance only through teachers' opinions in one Vietnamese university. The present study assesses university performance from two different aspects; teachers' opinions from several universities and the universities' rankings, since more research is needed to assess the relationship between organisational learning process and organisational performance (Pham and Tran, 2016). Therefore, we hypothesised:

H2: there is a positive relationship between organisational learning processes and university performance.

Organisational learning culture is oriented towards the promotion and facilitation of workers' learning, to contribute to organisational development and performance (Rebelo and Gomes, 2011). Many studies identify a positive relationship between organisational learning culture and organisational performance (Ellinger *et al.*, 2002; Sorakraikitikul and Siengthai, 2014). Although there is relatively little empirical evidence concerning the link between organisational learning culture and the performance of public organisations, there are some studies that allow us to infer that organisational learning culture is related to performance (Choi, 2020). Since public universities are part of the public organisations that are understudied, this investigation will focus on assessing this relationship in public universities. Hence, we hypothesised the following:

H3: there is a positive relationship between the organisational learning culture and university performance.

This study will also assess the mediation of organisational learning process in the relationship between organisational learning culture and university performance. Building on the previous hypotheses H1, H2 and H3, we propose that organisational learning culture alone is not sufficient to improve a university's performance and that there is a need to involve organisational learning to enhance the university's performance. Therefore, we hypothesise the following:

H4: the organisational learning process mediates the relationship between organisational learning culture and university performance.

5.2.4. Relationship between team learning and organisational learning.

After discussing the importance of the learning processes at both the team and organisational levels. Senge (1990) proposed that team learning is an essential component of organisational learning. Accordingly, researchers suggest that team learning is: "the activities by which team members seek to acquire, share, refine, or combine task-relevant knowledge through interaction with one another" (Argote, Grunenfeld and Naquin 1999, 370). Moreover, Edmondson (2002) suggested that an organisation learns through interactions such as knowledge sharing, collective reflection, and action between people situated within smaller teams or groups. She also added that team learning is a learning process separate from organisational learning. When individuals provide their knowledge and engage in collective action and

reflection within their teams, and with other teams with high task interdependence, they are engaging in the integrating process of Crossan, Lane, and White's (1999) 4Is model. These team-learning activities are likely to promote further organisational learning activities such as cross-organisational knowledge transfer and experimentation with new ideas (Dayaram and Fung, 2014) and the sharing of information among the organisation and information acquisition. Team learning actions promote individual knowledge to be eventually captured and disseminated across the organisation for full knowledge exploitation (Dayaram and Fung, 2014). Previous research mainly focused on individual, team and organisational learning qualitative studies without clearly representing the links between them (Altman and Iles, 1998; Antonacopoulou, 2006; Bontis et al., 2002; Crossan et al., 1999; Edmondson et al., 2001; Friedman, 2001; Kim, 1993; Leithwood, 1998; Marsick and Neaman, 1996; Mitchell and Sackney, 2000; Ross et al., 1994; Senge, 1990; Senge et al., 1994; Yeo, 2002a, 2002b). Empirical studies assessing the relationship between both team and organisational learning processes are lacking. Subsequently, this research proposes the following hypothesis.

H5: there is a positive association between team learning and organisational learning.

5.3. Methodology

5.3.1. Data collection and sample

Data were collected via an online questionnaire developed from the literature. After creating the questionnaire, two academic experts in the field of Organisation behaviour and human resources management revised the final version. The experts suggested modifications that were taken into consideration. The questionnaire was developed on Qualtrics and an anonymous link was sent to the respondents. The researchers sent the questionnaire to 2,583 university teachers. The university teachers are from different schools and departments, including schools of business, psychology, science, and engineering. The researchers received 115 questionnaires, but 20 questionnaires weren't complete, so we decided to exclude the incomplete questionnaires and kept 95 questionnaires, which corresponds to a response rate of 3.7%. The questionnaire was sent to 10 Portuguese public universities.

The sample is composed of 49.5% assistant professors, 25.3% associate professors, 7.4% full professors, 16.8% invited assistant/associate/full professors and 1% lecturers and assistants. Also, the majority of the sample (87.4%) has worked more than 7 years in the same university and more than 5 years in the same team (83.2%). As for the work status of the participants, 57.9% were on a full-time basis, and the majority

of the sample (53.7%) was composed of females. The survey was conducted from April 2020 till October 2020. Two reminder emails were sent to the respondents.

5.3.2. Measures

Organisational learning culture was assessed using the 6 sub-dimensions of the Dimensions of Learning Organizations Questionnaire (Watkins and Marsick, 1993, 1996). The sub-dimension of team learning was excluded since team learning was measured separately in this study. The scale consisted of 18 items that measured the six sub-dimensions: continuous learning, dialogue and inquiry, embedded system, empowerment, system connection and strategic leadership. The participants indicated to what extent they agree with each of the 18 items on a 7-point rating scale (1 = totally disagree, 7= totally agree). An example of the items is: "In my university, academic staff help each other learn."

We conducted a preliminary analysis of the organisational learning culture items (Watkins and Marsick, 1993, 1996) using a principal component exploratory factor analysis (EFA) with varimax rotation and then confirmatory factor analysis (CFA). The cut off for the loadings of the items was .50 for the EFA, and the difference between factor loadings should be higher than .30. Based on these criteria, we removed 10 items and kept 8 items that represent two different factors that we labelled: “dialogue and inquiry” and “system connection”. The final EFA is presented in Table 5.1.

Table 5.1: Factor loadings of the organisational learning culture items

Items	Dialogue and inquiry	System connection
My university works together with the outside community to meet mutual needs.	.850	.201
My university encourages the academic staff to think from a global perspective.	.835	.345
My university supports academic staff who take calculated risks.	.830	.367
My university encourages the academic staff to obtain answers from across the university when solving problems	.808	.283
My university creates systems to measure gaps between current and expected performance.	.796	.169
In my university, whenever academic staff state their view, they also ask what others think.	.127	.927
In my university, academic staff give open and honest feedback to each other.	.340	.829
In my university, academic staff spend time building trust with each other.	.412	.728

In the next step, we used CFA to test a first-order model. Specifically, we checked whether CFA confirms the results of the EFA. The results show acceptable fit indices, with $\chi^2/df = 3.674$; CFI = .909; TLI = .866; RMSEA = 0.169 and SRMR=.0668. All factor loadings are significant ($p < .05$) and indicate adequate factor loadings.

The organisational learning process scale was assessed based on the Santos-Vijande et al., 2012, scale. The scale consists of 22 items that measure four subdimensions: information acquisition, knowledge dissemination, shared interpretation, and organisational memory. Individuals indicated to what extent they agree with each of the 22 items on a 7-point rating scale (1 = totally disagree, 7= totally agree). An example of the items is: "We have a meeting schedule among departments and with the dean to integrate the existing information." We conducted a preliminary analysis of the organisational learning items (Santos-Vijande et al., 2012) using a principal component EFA with varimax rotation and then CFA. The cut off for the loadings of the items was .50 for the EFA, and the difference between factor loadings should be higher than .30. Based on these criteria we removed 14 items and kept 8 items that represent two different factors that we labelled as: "Information acquisition" and "Knowledge dissemination". The final EFA is presented in Table 5.2.

Table 5.2: Factor loadings of Organisational learning process items

Items	Information acquisition	Knowledge dissemination
We constantly evaluate the need to adapt to the business environment/society.	.884	.294
We periodically check whether our strategy is aligned with the business environment/society.	.862	.300
Problems are approached proactively, that is, we learn from other entities to be able to deal with these problems before they arise.	.856	.299
When we do not have the specific knowledge required, we look for it and acquire it outside the university.	.793	.247
We use formal and reiterative procedures to evaluate our results and compare them with those of the competition.	.722	.302
We devote some time to discussions about the university's future needs.	.317	.885
We have scheduled meetings among departments and with the dean to integrate the existing information	.239	.858
The university's general objectives are communicated throughout the university.	.321	.738

The preliminary analysis includes examining the organisational learning process (Santos-Vijande et al., 2012) using the EFA and then CFA. In the next step, we used CFA to test a first-order model. Specifically, we checked whether CFA confirms the results of the EFA. The results show acceptable fit indices, with $\chi^2/df = 1.293$; CFI = .935; TLI = .885; RMSEA = 0.056 and SRMR = .0429. All factor loadings are significant ($p < .05$) and indicate strong factor loadings.

Savelsbergh's team learning scale (2009) is composed of six sub-dimensions, which are: co-construction of meaning, exploring different perspectives, error analysis, error communication, feedback-seeking behaviour and experimenting. Team learning is tested with 21 items. The 21 items were scored on a 7-point Likert scale (1 = totally disagree, 7 = totally agree) for the team learning scale. An example of the items is: " We discuss errors within our Pedagogical Team/department/unit, because errors and their solutions may provide important information.". The preliminary analysis includes investigating team learning (Savelsbergh, 2009) using EFA and then CFA. Since these sub-dimensions are not replicated in other studies, this research evaluates this scale in universities to validate it. As the subdimensions are measured using an adapted scale, running a factor analysis for the items of each sub-dimension separately would be inappropriate. Therefore, we conducted an EFA for all items of team learning processes. We conducted a principal component EFA using varimax rotation. The extraction of the factors was performed using EFA with the weighted least squares factoring method, and varimax transformation was also computed. The cut off for the loadings of the items was .50, and the difference between the factor loadings should be higher than .30. The final EFA is presented in Table 1. We removed 12 items and kept 9 items that represent co-construction and error communication based on these criteria.

The highlights of the results are represented in Table 5.3. They indicate two factors with eigenvalues greater than one, explaining 74.865% of the variance, corresponding to the subscales identified by (Savelsbergh, 2009). Also, the KMO test reported (.912) and Bartlett's Test is significant ($P < .05$). Co-construction and error communication are the ones with the highest values.

Table 5.3: The EFA loadings of the items and team learning items.

Items	Error communication	Co-construction
Errors are discussed openly.	.905	.331
In our pedagogical Team/department/unit's mistakes are discussed among each other.	.893	.330
After an error has occurred, it is analysed thoroughly in this Pedagogical Team/department/unit.	.887	.328
We discuss errors within our Pedagogical Team/department/unit, because errors and their solutions may provide important information.	.872	.359
Pedagogical Team/department/unit members communicate their mistakes, to prevent others from making the same mistake.	.869	.388
Information from pedagogical Team/department/unit members is complemented with information from other team members.	.207	.917
Pedagogical Team/department/unit members collectively draw conclusions from the ideas that are discussed in the team.	.412	.857
Pedagogical Team/department/unit members elaborate on each other's information and ideas.	.405	.830
If something is unclear, we ask each other questions.	.402	.781

In the next step, we used CFA to test a first-order model. Specifically, we checked whether CFA confirms the results of the EFA. The results show acceptable fit indices, with $\chi^2/df = 1.46$; CFI = .98; TLI = .98; RMSEA = .070 and SRMR=.37. All factor loadings are significant ($p < .05$) and indicate adequate factor loadings. The results indicate that the indicators: (1) co-construction and (2) error communication are relevant to measure the team learning processes in universities. Finally, we checked the scales' internal consistency to measure these indicators by calculating Cronbach's alpha. The results indicate strong scale reliability for both co-construction (.94), and error communication (.97).

University performance is assessed using two approaches: one is objective and the other subjective. The former was assessed using questionnaires to indicate the performance from the teachers' perspective. The latter was assessed using higher education indicators. The indicators include overall, teaching, research, citations, industry income and international outcome. The average scores of these indicators, for the universities assessed, were taken from the Times Higher Education website for 2020, (Times higher education, 2020).

The questionnaire is based on Jyothibabu et al. 2010. But the scale is adapted to better fit the university context. The university performance scale includes 7 items. All

items were scored on a 7-point Likert scale (1 = totally disagree, 7= totally agree). An example of the items is: "My university meets its performance targets." The reliability score = 0.93. CFA was used to test a first-order model in the next step. Specifically, we checked whether CFA confirms the results of the EFA. The results show acceptable fit indices, with $\chi^2/df = 1.36$; CFI = .99; TLI = .98; RMSEA = 0.06 and SRMR= .042. All factor loadings are significant ($p < .05$) and indicate strong factor loadings.

5.3.3. Data analysis

We tested our hypotheses with the statistical software IBM SPSS Statistics Suite, version 27 using the PROCESS macro by Andrew Hayes (2013) to test the mediation hypothesis.

5.4. Results

5.4.1. Hypothesis testing

Table 5.4 provides the means, standard deviations, and correlations for all the variables in the study.

Table 5.4: Descriptive statistics and correlations.

		Mea n	Sd	1	2	3	4	5	6	7
1.	Co- construction	5.21	1.35	1						
2.	Error communication	4.34	1.77	.69**	1					
3.	Dialogue and inquiry	3.77	1.32	.43**	.63**	1				
4.	System connection	3.93	1.38	.32**	.47**	.60**	1			
5.	Information acquisition	4.15	1.34	.31**	.52**	.57**	.78**	1		
6.	Knowledge dissemination	4.00	1.52	.29**	.38**	.52**	.58**	.62**	1	
7.	University performance	4.71	1.11	.27**	.42**	.56**	.73**	.74**	.55**	1

n=95, ** Correlation is significant at the 0.01 level (2-tailed).

The findings show the acceptance of H1, where there is a strong significant positive relationship between dialogue and inquiry and information acquisition ($r = .57$, $p < .001$), there is also a strong positive significant relationship between dialogue and inquiry and knowledge dissemination ($r = .52$, $p < .001$). There is a strong significant positive relationship between system connection and information acquisition ($r = .78$,

$p < .001$), and a strong significant positive relationship appeared between system connection and knowledge dissemination ($r = .58, p < .001$).

The findings also support H2, where there is a strong significant positive relationship between information acquisition and university performance ($r = .74, p < .001$), also there is a strong positive significant relationship between knowledge dissemination and university performance ($r = .55, p < .001$).

Further, the results support H3, where there is a strong significant positive relationship between dialogue and inquiry and university performance ($r = .56, p < .001$), also there is a strong positive significant relationship between system connection and university performance ($r = .73, p < .001$).

The findings in Table 5.4 show the acceptance of H5, where there is a positive significant relationship between co-construction and information acquisition ($r = .31, p < .001$) and between co-construction and knowledge dissemination ($r = .29, p < .001$). There is a significant positive relationship between error communication and information acquisition ($r = .52, p < .001$) and between error communication and knowledge dissemination ($r = .38, p < .001$).

This study tested mediation, H4, using Hayes (2013). Macros were developed to assess the mediation analysis of the models on SPSS. Macros help estimate the indirect effect with a bootstrap approach (Cole et al., 2008).

Organisational learning culture (dialogue and inquiry and system connection) has an indirect effect on university performance mediated by organisational learning processes (information acquisition and knowledge dissemination), which supports H4. Dialogue and inquiry have an indirect impact on university performance mediated by information acquisition ($IE = .3035$). The indirect effect is statistically significant, a bootstrapped 95% confidence interval around the indirect effect did not contain zero $CI [.1961, .4114]$. Also, system connection indirectly affects university performance mediated by information acquisition ($IE = .2787$); the indirect effect is a statistically significant bootstrapped 95% confidence interval around the indirect effect that did not contain zero, $CI [.1229, .4213]$. Dialogue and inquiry have an indirect impact on university performance mediated by knowledge dissemination ($IE = .1558$). The indirect effect is a statistically significant bootstrapped 95% confidence interval around the indirect effect that did not contain zero, $CI [.0422, .3114]$. However, system connection does not indirectly affect university performance mediated by knowledge dissemination $CI [.0093, .2309]$. Table 5.5 shows the summary of the tested hypotheses.

Table 5.5: The summary of tested hypotheses

Hypotheses	Results	Correlation, regressions & mediation analyses
H1: there is a positive relationship between the organisational learning culture and the organisational learning process.	Supported	Dialogue and inquiry and information acquisition ($r = .57, p < .001$) Dialogue and inquiry and knowledge dissemination ($r = .52, p < .001$) System connection and information acquisition ($r = .78, p < .001$) System connection and knowledge dissemination ($r = .58, p < .001$)
H2: there is a positive relationship between organisational learning processes and university performance.	Supported	Information acquisition and university performance ($r = .74, p < .001$) Knowledge dissemination and university performance ($r = .55, p < .001$).
H3: there is a positive relationship between the organisational learning culture and university performance.	Supported	Dialogue and inquiry and university performance ($r = .56, p < .001$) System connection and university performance ($r = .73, p < .001$)
H4: the organisational learning process mediates the relationship between organisational learning culture and university performance.	Partially supported	Dialogue and inquiry have an indirect impact on university performance mediated by knowledge dissemination (IE=.1558), statistically significant bootstrapped 95%, CI[.0422, .3114] Dialogue and inquiry have an indirect impact on university performance mediated by knowledge acquisition (IE=.3035) statistically significant bootstrapped 95%, CI[.1961, .4114] System connection has an indirect impact on university performance mediated by information acquisition (IE=.278), statistically significant bootstrapped 95%, CI[.1229, .4213] System connection did not indirectly affect university performance by knowledge dissemination
H5: there is a positive association between team learning and organisational learning	Supported	Co-construction and information acquisition ($r = .31, p < .001$) Co-construction and knowledge dissemination ($r = .29, p < .001$). Error communication and information acquisition ($r = .52, p < .001$)

5.4.2. Further Analysis

As the organisational level is the level of analysis in this study, the individual answers of the participants were aggregated to the organisational level. We calculated the mean values and standard deviation values for the universities participating in the study and for the indicators. To assess whether it was statistically justifiable to aggregate individual level team member data (Bliese, 2000), the $r_{wg(j)}$ “reliability within groups on j number of items” (James et al., 1993) was calculated. The $r_{wg(j)}$ values were: 0.75 (organisational performance), 0.64 (Dialog and inquiry), 0.62 (System Connection) and 0.70 (Information acquisition) and 0.52 (Knowledge dissemination). Scores from 0.51 to 0.70 indicate a moderate agreement, while scores from 0.71 to 0.90 showed a strong agreement (Woehr et al., 2015). Researchers have always struggled with identifying the cutoff criteria for different models (Woehr et al., 2015) These results provided sufficient statistical justification for aggregation as they have a moderate and strong agreement.

5.4.2.1. Further hypotheses testing

In the following Table 5.6, Spearman correlations are used to assess the relationships between organisational learning processes and the university ranking indicators. A significant positive correlation was found between knowledge dissemination and the university’s overall score ($r_s = .808, P < 0.05$). Also, a significant positive correlation was found between knowledge dissemination and the teaching score ($r_s = .929, P < 0.05$).

Table 5.6: Spearman correlations for Team learning

	1	2	3	4	5	6	7	8	9	10
1-Information acquisition	1									
2-Knowledge dissemination	0.33	1								
3-Dialogue and inquiry	.82**	.40	1							
4-System connection	.95**	.30	.88**	1						
5-Overall	-.12	.80*	-.08	-.22	1					
6-Teaching	-.36	.93**	-.32	-.46	.81*	1				
7-Research	-.14	.61	-.07	-.25	.73	.71	1			
8-Citations	-.25	.57	-.04	-.25	.81*	.57	.50	1		
9-Industry income	.11	.50	.25	.11	.06	.43	.43	-.29	1	
10-International outlook	-.10	.68	.11	-.21	.24	.61	.32	.32	.61	1

n=9,**. Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).

5.5. Discussion and conclusion

This study examines the impact of the organisational learning culture on the organisational learning process in the university context as well as the impact of the organisational learning process on a university's performance. The literature showed a gap, where organisational learning processes are rarely assessed in universities. Also, most of the previous studies assess the impact of culture on organisational learning, but few studies have assessed the impact of organisational learning culture on the organisational learning process.

The findings of this study contribute to the literature in many ways. The findings support the positive relationship between an organisational learning culture and an organisational learning process. Organisational learning culture is represented by dialogues and inquiry and the system connection. Organisational learning processes are represented in this research as information acquisition and knowledge dissemination. Dialogue and inquiry and system connection have a positive impact on information acquisition and knowledge dissemination. So, the findings indicate that the more the learning culture increases in the university, the more the learning processes occur. This relationship between the organisational learning culture and the organisational learning process is assessed empirically in this research, contrary to other studies where previous research always capitalised on organisational culture rather than organisational learning culture (Cho et al., 2013; Liao et al., 2012). This research also contributes to organisational learning research as the results show that the organisational learning culture is one of the antecedents to the organisational learning process. Accordingly, top management in universities needs to focus on improving the organisational learning culture to have better organisational processes.

The findings also support H2 that posits the positive relationship between the organisational learning process and a university's performance. Our findings agree with previous research that supported the positive relationship between organisational learning and performance in organisations (Aragon et al., 2014; Bontis et al., 2002; Jyothibabu et al., 2010). We mainly focus on organisational learning processes that enhance a university's performance. Our findings show that the better the information acquisition process and knowledge dissemination processes are, the better the university's performance is. So, in practical terms, the more efficient the acquisition of knowledge from two sources is, then the university's performance is better. The two sources of information acquisition are; internally from within the university and externally from other universities in the market. In this research, information acquisition is the process of identifying tendencies and problems, which leads to a better performance by the university. Another example of an organisational learning process may be found during the departmental and pedagogical meetings, during which the future of the courses, the programmes, and the schools is discussed, this leads to better dissemination of knowledge and eventually a better performance by the university. The relationship between the organisational learning process and a university's performance has also been supported at the organisational level. The aggregated data of

organisational learning processes showed a positive relationship with the university's indicators, specifically the overall university score and the teaching score. This is because knowledge dissemination and information acquisition are associated positively and significantly with the overall score and the teaching score. Subsequently, this positive relationship is accepted at both, individual and organisational levels. These findings are novel in the field of organisational learning as these relationships are supported through both primary and secondary data. This research has focused on the relationship between organisational learning culture and university performance. The findings in this study agree with previous studies (Ellinger *et al.*, 2002; Sorakraikitikul and Siengthai, 2014) that there is a positive relationship between the organisational learning culture and performance, the present study assessed this relationship empirically in the context of higher education while other studies have focused on industries. (Choi, 2020) focused the assessment of the relationship between organisational learning culture and performance in public organisations generally. The present study focused on public universities as part of the public organisations in any country. The findings show that universities that have a supportive learning culture will lead to better performance. If universities encourage a strong learning culture among their teachers, staff and students, this will eventually lead to a better performance. Moreover, the organisational learning process mediates the relationship between organisational learning culture and university performance, as illustrated by the findings. These results also show that the more the university encourages a learning culture and capitalises on the organisational learning processes, the higher the university's performance will be.

This study highlights the relationship between team learning processes and organisational learning processes in universities. In previous research (Senge, 1990) proposed that team learning is part of the learning organisation, while (Edmondson, 2002) suggested that team learning is a separate construct used to assess the collective learning in the organisations. Few studies discuss learning at the individual, team and organisational level without clearly highlighting the links between them. This investigation focused on assessing the relationship between team learning and organisational learning. The findings show that there is a significant relationship between team learning processes and organisational learning processes. Accordingly, the team learning process should be considered as a separate process from

organisational learning, even though team learning has an influence on organisational learning.

Finally, this study has created a suitable model to assess organisational learning processes, antecedents, and outcomes in universities, please see Figure 5.1. It has contributed to the theory of organisational learning area, it shows a new adapted model of organisational learning culture as well as organisational learning as a process and their influence on a university's performance. This adapted model may be considered novel because it indicates the antecedents, processes, and outcomes of organisational learning.

Implications

This research serves universities; the implications of this research could be adapted to various faculties such as: business, engineering, science and others. This investigation recommends that universities should provide a learning culture that promotes more dialogue and inquiry among the university members. The organisational learning culture should be encouraged at all university levels, including among deans, heads of departments, directors, and teachers. After providing the necessary organisational learning culture, universities should develop their organisational learning process in order to increase their performance. To develop the organisational learning process, universities are recommended to capitalize on information acquisition and processes to disseminate knowledge. The top management in universities needs to involve the rest of the university members in the decisions they take, the strategies they come up with, and problems they face in order to promote a collective learning process. Internal information systems should always be updated as this improves communication among the university members. This was made clear when, during a crisis like the Covid-19 pandemic, all the university's members relied on the university's communication systems. The university members need to understand that their input into these systems is essential.

In conclusion, all these recommendations are likely to help universities achieve a better university performance. Top managers like deans, rectors and school heads in universities need to focus on the flow of learning within the university. As they need to focus on the organisational learning process at the organisational level. Also, the heads of the departments and directors need to focus on team learning within their areas to assure the upward flow of the process to the organisational level. Universities need to

work on team and organisational learning processes as they help universities to adapt to the changes and challenges, they face and to have a better performance.

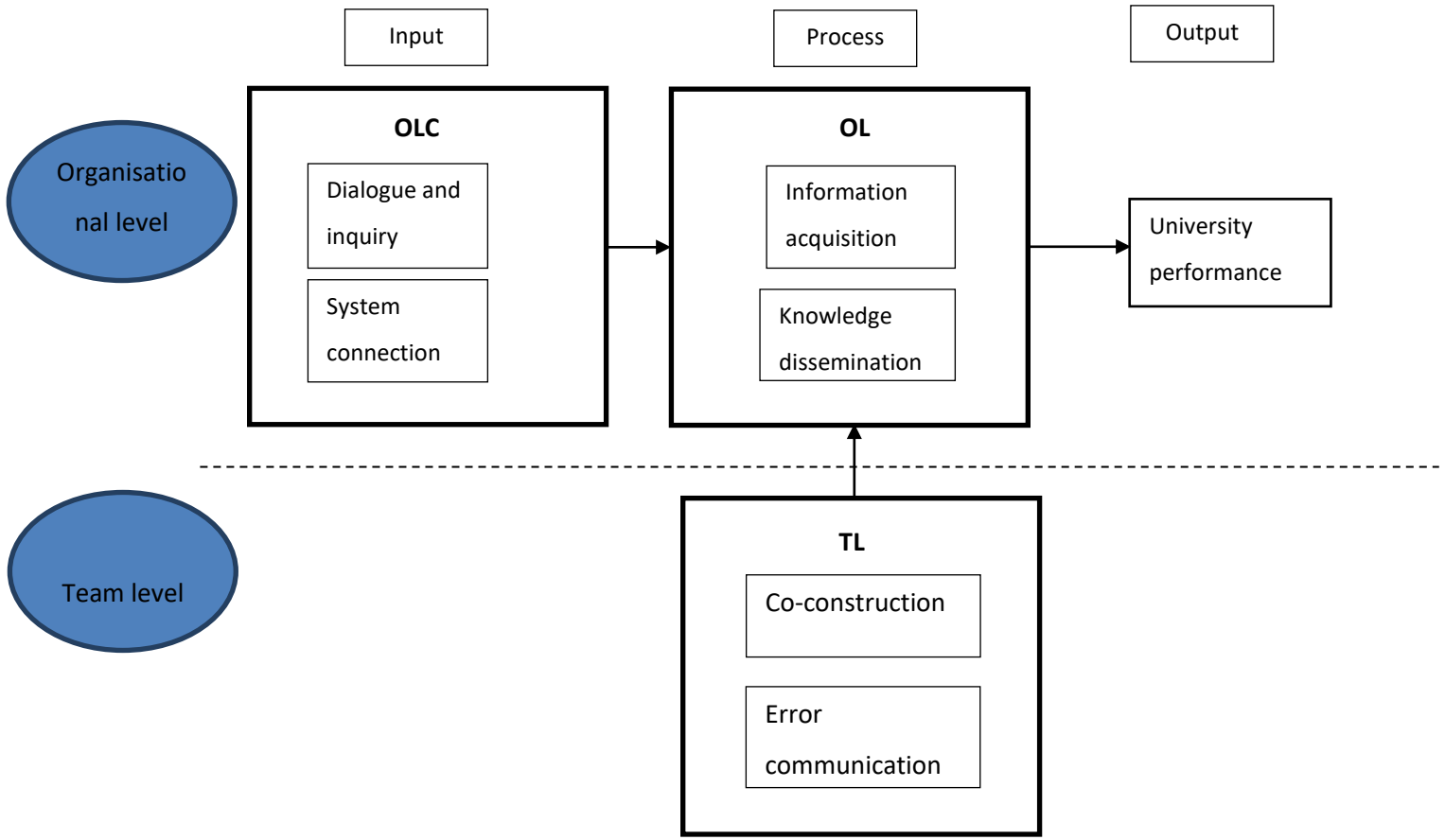


Figure 5.1: New proposed OL model, OLC: Organisational learning culture, OL: Organisational learning, TL: Team learning

General Conclusion

6.1. Introduction

During the Covid-19 pandemic, most organizations were faced with enormous challenges to which they had no answer and higher education institutions were no exception. Organisations met a lot of change and needed a rapid movement to adapt to the change (Daft, 2012).

Learning is mentioned in this thesis as a critical factor that helps organisations survive, be more competitive, and adapt to the change occurring (Balay, 2012; Kezar and Holcombe, 2019). The literature has suggested that learning is an important predictor of adaptation and organizational change. In this sense, universities, like any other organization, should encourage these processes. This thesis mainly focused on assessing learning processes in universities. Few pieces of research have been developed to tackle learning on the team and organisational learning levels in universities. Therefore, this thesis mainly focused on understanding the learning phenomenon in universities and then assess empirically a model of predictors and consequences at universities. In this thesis, we made a distinction between learning at the team level and learning at the organizational level, following Edmondson's (2002) suggestion, contrary to Senge's (1990) idea that team learning is part of organisational learning processes.

The starting point of this work was the identification of three distinct gaps that we considered relevant and for which the literature has not responded. The first was: the occurrence of team learning and organisational learning within universities. The second gap was identifying the relevant processes for team learning, organisational learning within universities. The third gap was describing the relationship between team learning and organisational learning in universities. In order to address these gaps, we developed three empirical studies to better understand the learning processes and their relationship in universities.

Also, another gap that emerged was the lack of management literature to provide related frameworks and constructs to team and organisational learning in universities, including all disciplines; accordingly, this thesis develops team and organisational learning constructs that are mainly related to learning studies. Finally, another gap was

having a construct that specifically discusses organisational learning culture in universities, which also has been developed in this thesis.

In this thesis, the outcome of the first study is a framework that discusses mainly the actual team and organisational processes in universities, their facilitators, and outcomes. Subsequently, in the second study, a model is developed that is mainly related to team learning and the predictors and outcomes in universities. As for the third study, an organisational learning model is developed that includes the predictors of the organisational learning process and its outcomes.

The following section mainly discusses the theoretical and practical implications of this thesis.

6.2. Implications

In the following table 6.1, the research questions, the design of the studies and the theoretical, empirical, and practical implications of each study are displayed.

Table 6.1: Main findings of this thesis.

	Research Questions	Design	Main theoretical and empirical implications	Main methodological and practical implications
Study 1	<ul style="list-style-type: none"> • How is team learning and organisational learning implemented in universities? • What is the relationship between team learning and organisational learning in higher education institutions? • What are the facilitators and outcomes of team learning and organisational learning in universities? 	Qualitative study Interviews	<ul style="list-style-type: none"> • Development of themes that identify team and organisational learning in universities. • Also, development of themes that show the facilitators of team learning and organisational learning facilitators and outcomes. • Identifying the relationship between team learning and organisational learning. 	<ul style="list-style-type: none"> • Team learning process involves formal and informal learning processes, as both are important for having an improvement in the team learning process and describing the actual processes at universities context. • Team learning processes includes sharing of information among the team members, storage and retrieval of the information gathered within the team and connection to system. These processes are explaining how the team learning occurs in the universities. • Also, organisational learning processes include sharing of pedagogical processes within the whole university. Also, organisational learning processes include formal meeting and feedback, as for informal processes include sharing of information within the whole university including academic staff, administrative staff and the rectory. • Supportive learning environment is a key for having better team and organisational learning. • The more frequent the organisational learning processes, the easier the flow of regulations and procedures among the university.
Study 2	<ul style="list-style-type: none"> • Is team learning available in universities? • How does team psychological safety 	<ul style="list-style-type: none"> • Scale validation CFA and EFA • Correlational study 	<ul style="list-style-type: none"> • Empirical distinction of team learning process, team psychological safety and team leadership. • Team learning is defined by 2 	<ul style="list-style-type: none"> • Importance of having team psychological safety and team leadership when studying team learning at university and on team level construct. • Importance of team learning processes

	<p>and shared leadership influence team learning?</p> <ul style="list-style-type: none"> • Is there a relationship between team learning and team performance? • Is team learning mediating the relationship between team psychological safety, shared leadership, and team performance? 	<ul style="list-style-type: none"> • Mediation analysis 	<p>factors.</p> <ul style="list-style-type: none"> • Team learning is positively related to team performance. • Team learning mediates the relationship between team psychological safety and team performance and partially mediated the relationship between team leadership and team performance. • Team leadership and team psychological safety are positively related to team learning processes. • Sample of academic staff from different universities, colleges, and majors. 	<p>measures related to universities context.</p> <ul style="list-style-type: none"> • Psychological safety environment should always be available as it promotes team learning and eventually team performance. • Shared leadership promotes team learning processes, as when the teams share responsibilities and tasks, the more they will share the errors that have been made and construct the ideas and solutions for the errors occurred. Also, the increased communication of errors will promote better team performance.
Study 3	<ul style="list-style-type: none"> • Is organisational learning available in universities? • How does organisational learning culture influence organisational learning? • Is there a relationship between organisational learning and organisational performance? • Is there a relationship between team learning and organisational learning? 	<ul style="list-style-type: none"> • Scale validation CFA and EFA • Correlational study • Mediation analysis 	<ul style="list-style-type: none"> • Empirical distinction of organisational learning culture, organisational learning and university performance. • Organisational learning and organisational learning culture are defined by 2 factors. • organisational learning culture is positively related to organisational learning. • Organisational learning is positively related to university performance. • Organisational learning mediates the relationship between organisational learning culture and university performance. • Sample of academic staff from different universities, colleges, and majors. 	<ul style="list-style-type: none"> • Importance of having a supporting organisational learning culture when implementing organisational learning at universities, as it has a positive impact on organisational learning processes and eventually increase the university performance. • Importance of having organisational learning processes measures that are related to universities. • Organisational learning processes promote having better universities ranking. Therefore, there is a need on developing them at universities. Not only the academic staff need to focus on developing the learning processes at the universities, but also the rector and deans need to be involved. • The need to focus on the team learning processes influence on organisational

	<ul style="list-style-type: none"> • Is the organisational learning process mediating the relationship between organisational learning culture and university performance? 		<ul style="list-style-type: none"> • The relationship between organisational learning and universities ranking is assessed. • The relationship between team learning and organisational learning is assessed. 	<p>learning processes. As the more increase of co-construction of ideas, solutions and communication of errors among the teams, the more the acquisition of information and dissemination of knowledge within the whole organisation.</p>
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6.3. Theoretical implications

The main theoretical implication in the thesis is describing the phenomena of both team and organisational learning in the university's context as research on both processes is scarce. Another important theoretical implication is describing the relationship between team and organisational learning in the university's context.

For the first implication of describing team learning in universities, qualitative and quantitative studies were developed. Study 1 has started by conducting interviews with master's program directors, deans, sustainability, and quality representatives to understand better the learning processes from middle and top managers' perspectives in the public universities. Most of the previous research developed in universities focused on individuals, but the middle, and top managers shed light on teams and organisational levels in universities. Subsequently, the thematic analysis helped identify the relevant themes that describe the universities' actual processes.

Moreover, the facilitators of team learning processes contribute to a better understanding of the learning processes in universities. Previous research mentioned some of the facilitators of the learning processes (Decuyper et al., 2010), but very few highlighted the related facilitators in the education context. The thematic analysis findings that are developed in study 1 show the importance of having a supportive learning environment as a facilitator on the team level as it helps in the occurrence of team learning.

From study 1 a model has been developed that included team learning processes in universities and the facilitators of the team learning processes and the outcomes of the processes. Moreover, in study 2 we validated the team learning model that has been deduced from study 1, also we have validated the team learning predictors as team psychological safety and team leadership. Also, we have validated the team learning outcome which is team performance. Both EFA and CFA were performed to validate the constructs. The relevant team learning processes are Co-construction and error communication, where these processes are mainly representing the team learning processes in universities. This thesis recommends using the team learning developed model as it is relevant to universities.

Study 2 assess the model empirically in universities context. Study 2 mainly focused on assessing team learning in universities but with a broader perspective and empirically testing it in the university's context. Which measures empirically the team learning processes, team psychological safety, team leadership and team performance in the university's context.

Some researchers called for more research at the team level in universities (Decuyper et al., 2010). Accordingly, it is considered a contribution to the team studies.

Several models and frameworks postulate that team psychological safety and team leadership are important predictors of team learning. However, it is not clear how they influence team learning processes and whether they have an input on all the team learning processes. This thesis demonstrates that both team psychological safety and team leadership are important predictors for team learning processes. Decuyper et al. (2010) argued that little is known about team learning predictors in universities. The findings discussed in study 2 show that teams need team psychological safety as it helps develop team learning processes. Our findings support the Decuyper et al. (2010) findings, as team psychological safety is a facilitator of the team learning process.

Some researchers focused on team leadership's impact on team learning (Koselag-Kreunen et al., 2018; Van den Haar et al, 2017), but very few researchers focused on team leadership impact on team learning processes. The findings reported in study 2 show that team leadership is an important predictor of team learning processes, as it helps in improving team learning in universities. This finding is supported by (Koselag-Kreunen et al., 2020), where Koselag-Kreunen's paper mentioned the positive impact of team leadership on team learning behaviour in university teacher teams. It is mentioned in (Koselag-Kreunen et al., 2020) the importance of having team leadership to support team learning, as teacher teams usually need empowerment to work in teams and learn together, specifically by emphasising the importance of team learning that helps in adapting to the change. In this thesis, the literature on team leadership impact on team learning is broadened, as we highlighted the relevance of team leadership to the specific team learning processes (error communication and Co-construction) in universities. As Koselag-Kreunen et al. mentioned in 2020, 95% of studies developed in team leadership were in contexts other than the educational setting. Hence, Koselag-Kreunen et al. (2020) mentioned that it is still unclear the influence of team leadership on team learning in educational change. Accordingly, the importance of team leadership, specifically the shared team leadership positive relationship with team learning processes (error communication and Co-construction) is novel to the team leadership literature.

Another important contribution is the impact of team learning processes on team performance. The findings of study 2 showed that team learning processes improve team performance, and academics need to focus on developing better team learning processes to have better performance, which eventually helps in team adaptation. These results agree with

a previous empirical study like (Savelsbergh et al., 2009), however, few researchers assessed team learning impact on team performance in universities while specifying the relevant team learning processes to the universities' context. Accordingly, this analysis adds up to the literature on team learning and team performance.

Moreover, the mediation of team learning in the relationship between the predictors and outcomes is considered a new empirical model. This mediation shows the importance of having team learning processes that help teams at universities succeed and adapt. Moreover, some studies showed the need for team leadership for team learning and team performance (Koeslag-Kreunen et al., 2020; Moregson et al., 2009). The thesis findings showed the need for team leadership when the team is involved in error communication process, which helps in communicating errors among team members, as it will help improve team performance. But team leadership isn't indirectly impacting team performance through co-construction, which is one of the team learning processes; this might be because team leadership is different during a crisis like the covid-19 pandemic than during stable times.

For the second implication of describing the organisational learning in universities, a qualitative and quantitative studies were also developed. Most of the previous research focused on assessing learning organisations, for example, the review developed by (Ortenblad and Koris, 2014) showed the studies focused on assessing learning organisations. Furthermore, very few studies focused on the learning processes and identified which organisational learning processes are more relevant to public universities and the education sector.

Study 1 has also qualitatively assessed the perspective of program directors and deans in public universities. In reference to organisational learning, the thematic analysis developed in study 1 helped identify the relevant themes that describe the universities' actual processes.

The thematic analysis findings that are developed in study 1 show the importance of having a supportive learning environment as a facilitator on level at helps in the occurrence of organisational learning, same as the impact of the learning environment on team learning that is shown in the study 1.

From study 1 a model has been developed that included organisational learning processes in universities and the facilitators of the organisational learning processes and the outcomes of the processes. Moreover, in study 3 we validated the organisational learning model that has been deduced from study 1, also we have validated the organisational learning predictor as organisational learning culture. Also, we have validated the organisational learning outcomes which is university performance. Both EFA and CFA were performed to

validate the constructs. The relevant team organisational processes are knowledge dissemination and information acquisition, where these processes are mainly representing the organisational learning processes in universities. This thesis recommends using the organisational learning developed model as it is relevant to universities.

Since researchers proposed that organisational learning culture is an important facilitator for the organisational learning process (Kontoghioghes et al., 2005; Marsick and Watkins, 2003), as discussed in study 3. This thesis focused on assessing organisational learning culture's impact on the organisational learning process. Although previous research mainly focused on assessing the organisational culture impact on organisational learning (ex: Oh and Han, 2018; Rebelo and Gomes, 2011). Few researchers focused on the impact of organisational learning culture on organisational learning. As, previous research showed organisational culture as decision-making processes, openness, learning orientation and leadership (Flores et al., 2012). While in this thesis, organisational learning culture was described as the collective learning culture that enhances the organisational learning activities (Sorakraikitikul and Siengthai, 2014) from an organisational perspective rather than an individual perspective. Accordingly, it is evident that this is a gap that was addressed and studied in this thesis. The findings show a strong relationship between organisational learning culture and organisational learning processes in the education context.

Moreover, the mediation of organisational learning processes between organisational learning culture and university performance assessed in study 3 is another theoretical contribution to the organisational studies. As the previous research mainly focused on the impact of organisational learning culture on organisational performance (Sorakraikitikul and Siengthai, 2014), scarce studies focused on the mediation analysis. The findings of study 3 show that dialogue and inquiry, one of the organisational learning culture factors, indirectly impacts university performance when it is mediated by both organisational learning processes (information acquisition and knowledge dissemination). These findings show the importance of having an effective learning culture and efficient organisational learning processes on the organisational level as they help improve university performance.

Previous studies focused on assessing the relationship between organisational learning and organisational performance (Bontis et al., 2002; Jyothibabu et al., 2010). But scarce studies focused on university performance, as it is a significant area to discuss in the higher education sector. University performance reveals the success of the university and its achievement of the university goals. Also, performance is considered an important output to be assessed as it measures whether the organisation has achieved its organisational goals or

not. Accordingly, in study 3, university performance is considered important as it helps assess whether the universities have achieved their university goals and succeeded or whether the university needs to adjust these goals. But since universities do not only rely on subjective performance, but other objective performance such as university indicators and rankings that impact the assessment of universities at the end of the academic year (Tee, 2015). It's undeniable the importance of university rankings in showing the performance of the universities, and how much universities are striving to excel in the national and international rankings (Hazelkorn, 2008; Tee, 2015). Performance indicators such as Times higher education rankings that assess the overall ranking of the universities, are considered an objective measure that uses statistical indicators to assess universities' performance (Tee, 2015). Subsequently, in study 3, we assessed the relationship between organisational learning processes and universities indicators. Scarce literature has considered assessing university performance through the rankings and indicators. This assessment is considered an empirical contribution in the organisational learning studies. As it shows another side of the university's performance that is considered important to the stakeholders, students, teachers, and researchers.

For the third implication of describing the relationship between team and organisational learning. This relationship is considered a scarce relationship in the learning studies, this is considered an important theoretical contribution. The relationship between team and organisational learning has been discussed also in both study 1 and 3. Study 3 findings are consistent with study 1 findings. There is a significant relationship between team learning and organisational learning. Where team learning processes have a positive impact on organisational learning processes. Most of the previous literature argues that learning begins with an individual and is then found at the collective level (Argyris, 1999; Kim, 1993; Lee and Roth, 2007; Wiewora et al., 2020). But still, there is an ongoing argument regarding where group learning ends and organisational learning begins. Some consider the team learning as part of the organizational learning (Campbell and Armstrong, 2013; Wiewora et al., 2020). While others, like Edmondson (2002) in Wiewora et al. (2020), agree that “learning flows to groups or teams through the interactions between individuals situated within smaller units, and that only at this meso-level, independent learning outcomes jointly impact organizational learning”. Our findings agree with the proposal of Edmondson 2002, where we found that team learning has a positive impact on organisational learning in higher education institutions. Accordingly, we suggest that there is a need to focus on developing

both processes on both team and organisational levels to have a better, effective, and efficient learning process in universities.

6.4. Practical implications

The research reported in this thesis offers practical implications for organisational and university teams. In particular, these implications are oriented to team leaders in a program, unit, or department and the top managers at universities like deans and rectors. In addition, the research reported in this thesis offers implications to human resources managers, to their human resources management and development practices.

The main implications for the team learning process are supporting the formal and informal learning process and having a supportive learning environment through strong communication among the team members. We also recommend developing team psychological safety and team leadership to have a better team learning process.

The formal team learning process can be supported by promoting sharing information, developing storage and retrieval, and having a better connection to the system as discussed in chapter 3. The sharing of information could be promoted in staff/unit/department or team meetings. The department head can empower the sharing of information and openness of the team to have a better learning experience. The meetings are recommended to be held in different structures, face to face or virtual meetings. The most important approach is to sustain the continuity of sharing the information, which would maintain the team learning process. (For example: during the covid-19 pandemic, meetings were held virtually to accommodate the work from home policy and still share the needed information, strategies, and adapted teaching methods). Developing storage and retrieval focuses mainly on the involvement of team members by sharing their experiences, activities, and information.

On the other hand, the retrieval process of this information should be available, efficient, and effective for other team members. (For example: storing the best practices for teaching a course could be helpful for a new team member, even if the best practices were shared from a previous lecturer who left the university / or a retired lecturer). Connecting to the system recommends making sure new teaching methodologies, new trainings, and conferences related to this team are available on the university platform. Moreover, easing the communication between the teachers using the university communication platform is recommended (For example using Microsoft teams and Zoom for the university team). The informal team learning process is important to university teachers. As this informal

communication helps in sharing the information and best practices between the university teachers. It is recommended to specify a place for teachers to meet and chat. It is also recommended to create activities, which will help increase the informal learning process. The mentioned informal learning process can only happen when some time is dedicated for the teachers for such informal practices.

Moreover, to assess the predictors of team learning processes and their indirect impact on team performance. These implications are directed to the teams. In order to have efficient team learning processes, we recommend team leaders to support having team psychological safety, where team leader helps the team members to feel safe about sharing their ideas, problems and suggestions. We suggest dedicating time to our regular meetings for team members to share their problems and new suggestions. We are considering a no shame environment, so the team members don't diminish the unfavourable ideas, suggestions or teaching methods by other members. Team leaders should support having such a culture of empowering team members and building a safe learning environment. We suggest also having a dedicated room for the unit or department or program on the university portal (ex: on Microsoft teams) for encouraging the sharing of new ideas, new teaching approaches, new challenges, new research topics or existing challenges and problems. Other team members can reply on the portal with their suggestions or best practices for the mentioned notions. For example, during the Covid-19 pandemic and the challenges that the teachers have faced led to a need for a new way to tackle the courses and units with the students as the old way weren't efficient for the best engagement and effective learning processes with the students, having such a supportive learning culture will help in transferring the experience and best practices among the team members (ex: using breakout rooms, using in class polls for increasing the interaction among the students). Another important predictor that helps in increasing the team learning process is having shared leadership. Shared leadership can be enhanced by the encouragement of the team leader for the diverse suggestions and sharing of the decision making among the team members.

The main implications for the organisational learning process are also supporting the formal and informal learning process and having a supportive learning environment. We also recommend developing organisational learning culture that promotes better organisational learning.

As for the organisational implications, Formal education needs to be supported. It is recommended to share the pedagogical practices among the whole university, and the findings suggest that deans and rectors should support having a supportive learning environment that

supports the occurrence of the organisational learning processes. Also, it is needed that the rectors and the deans conduct regular meetings with their staff and teachers on a more frequent base, rather than just once per academic year to ensure flexibility and openness. Also, it is needed that top managers at universities work on the feedback process as part of the organisational learning processes. Not only do top managers need to focus on formal processes, but they also need to capitalise on the informal sharing of information by making sure that there is a safe circle for all the teachers and staff to communicate with them. In all cases, both team leaders and top managers at universities need to create more structured learning processes.

We also suggest that the universities need to support having a strong organisational learning culture that helps acquire information and then communicate the information with all the organisational members. The learning culture should be built on trust and openness to help in improving the organisational learning processes and, eventually, university performance. We recommend that the Rector and deans of schools encourage having a strong learning culture among the university that supports having a better organisational learning process. Alignment between organisational learning culture and organisational learning process should be owned by the top managers at the universities (ex: rectors and deans) as if the university owns the learning culture. Not only sharing the new rules and regulations but also the practices of best performing the learning activities and how to maximise the value from the new or existing regulations and procedures.

Moreover, it is important to have a flow of information within the whole university. Having better organisational learning processes is an important aspect in order to have better performance and more investment from governments or companies. Better performance shows that the university is adapting to the change, and it is significant among the rest of the competitors.

As for the positive relationship between team learning and organisational learning. We recommend heads of departments and deans share and communicate errors with the teams and all the university members, this sharing would help in enhancing the relationship between the team and organisational learning. We also recommend the co-construction of ideas among the team members, which would also help in acquiring information and disseminating the knowledge on the organisational level.

There are 2 learning models developed in this thesis; the first model focuses on team learning and the second model focuses on organisational learning. It is recommended that

team leaders, quality representatives, and top managers use these models to assess team and organisational learning in their universities.

6.5. Limitations and directions for future research

Academic search is never complete and always faces criticism. Some limitations have faced the researcher while developing this thesis, and accordingly, these limitations are mentioned below. Specific limitations for each study are mentioned in their respective chapters.

In general, choosing the sample of teachers and program directors in public universities is quite challenging, as it is a unique sample to address in all the studies. In studies 2 and 3 the sample size is highly affected, as reaching teachers in universities was challenging. The data gathering of both studies 2 and 3 during the pandemic and the change that the universities faced has affected the response rate to the developed questionnaires. This is because of the uncertainty that the universities faced and changing all educational and administrative activities to online activities, and thus the research has been affected. At the same time, this period reflected the real-time of the occurrence of the pandemic and the importance of learning during this crisis that has faced the whole world.

Another limitation would be if the learning processes were assessed post the pandemic and over time (for ex: a whole academic year). It will show the team learning, and organisational learning processes and their predictors and outcomes after the pandemic finishes in the universities. It is recommended to reassess the developed team and organisational learning models in the thesis post the pandemic and when universities return to their normal activities at the campuses. However, this research is helping to improve the learning processes for remote teaching and helps the online teams.

This research focuses mainly on teacher teams in universities in the public sector. We recommend for future work to include private universities and polytechnic institutions as well. The differences between public and private universities lie upon several dimensions including: the diversity of their goals, access to resources, and the nature of organisational constraints (Scott and Falcone, 1998). So, it is recommended to assess the team learning and organisational learning models developed in this research in private universities and polytechnic institutions. We also recommend assessing the new team learning proposed model and the new organisational learning proposed model on the rest of the stakeholders in the universities.

The final limitation is that this research mainly focuses on universities in Europe since the data is gathered from universities in Portugal. It is recommended to assess the team

learning and organisational learning models developed in this research in other countries with different cultures (for example individualistic vs collectivist countries). Also, evaluating the relationship between team learning and organisational learning in firms is highly recommended since it is still a gap. This thesis has emphasised the positive impact that team learning has on organisational learning.

6.6. Final conclusion

Universities are an important type of organisation that needs more focus from the management researchers as they are the main place that delivers learning to all stakeholders (ex: students, teachers, staff, executive). This thesis developed two models to assess team and organisational learning in universities. It is important to spread the importance of learning to all universities and disciplines, not only business schools, as it will help, the universities to grow and adapt to the change, same as the team learning model will help teams adapt and succeed. An important research question in this thesis is: if there is a relationship between team learning and organisational learning?. The findings show that having better team learning will promote better organisational learning. Results also show that team learning improves team performance and organisational learning improves university performance. Another important aspect that is significant on both team and organisational levels is the learning culture, and it's important for teams and top managers to constantly work on it to have better learning processes.

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Appendix A

Interview guide

Good afternoon. First of all, I would like to thank you for accepting doing this interview and for your availability for this interview.

My name is Roba Elbawab and I am PhD Student in management at the Business Research Unit (Research Center) at ISCTE- Instituto Universitário de Lisboa.

Me and my supervisor Ana Passos are carrying out a project about organizational learning and team learning processes in the Portuguese higher educational institutions. Where we consider that organisational learning process is related to how the organisation facilitates the learning to its members, sharing information...). We would like you to focus most on the factors that promote organisational learning, team learning and practices that are used in your organisation.

We are doing interviews in different organizations in order to get knowledge about the process of organizational learning and team learning at several units, teams and organizations and the challenges that it involves.

Your opinion is very important and there are no right or wrong answers. We would like to know your perspective/point of view. All the comments are confidential, and we will not identify any of your answers.

Introduction

Part 1.

Introductory questions

1. Tell me about your job. What are your job responsibilities within the organisation?
2. Tell me about the organisation (size, number of professors, lecturers or administrative staff, etc.)
3. Can you tell me about the main organizational values or mission?

Part 2

Goal: Understanding organizational learning process, its implementation and consideration in the university context.

3. Having in mind this organizational learning definition, how does organizational learning occur in your university, which practices, and strategies are used to promote organizational learning?
4. Is organizational learning a core aspect of your university? Why? Give examples.
5. share examples from my perception about organizational learning.

Part 3

Goal: Understanding team learning process, whether it is applied on team/unit/department and its examples and practices.

10. Think now in your department/team/unit, how is learning occurring? Which processes are involved in this learning process?
11. give examples of team learning, how do you think it is applied in your team, explain with examples?
12. what are the factors that promote team learning?
13. In your opinion how team learning is related to quality, innovation, ...?
14. when you have information/knowledge, to whom you share this information? How do you keep the information and knowledge?
15. In your experience what could be the outcome of the learning process in your team/department/ unit?
16. what are the barriers/ facilitators of the learning process? What can be done to promote the learning process?

Part 4.

Goal: Understanding the relationship between team learning and organizational learning in the university context.

17. In your department/ unit/team/program, describe how organizational learning is related to the teacher teams behaviors? (in terms of practices).

I would like to thank you for your time. We would like to know your comments and opinion about the interview, if any. Moreover, our research group is going to develop further research on team learning in universities. If you and your organisation are interested in this issue, we would be glad to include you in our future work.

This is our email address (rrebe@iscte-iul.pt) if you would like to send some comments in the future or contact us for any other issue.