Universidade do Minho
Escola de Economia e Gestão

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Unlocking the Potential: An Investigation into the Underutilization of Advanced Features in Standard Office Software Tools

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Declaration

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Statement of Integrity

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

Unlocking the Potential: An Investigation into the Underutilization of Advanced Features in Standard Office Software Tools

Abstract

This study analyzed the underutilization of advanced features in feature-rich software tools, specifically focusing on the case of standard office software tools (SOST). It aimed to identify the causes of underutilization and explore the implications for organizations, managers, and employees. The research adopted the Unified Theory of Acceptance and Use of Technology model (UTAUT) as a theoretical framework and extends it by incorporating additional variables specific to the context of SOST. A qualitative study (exploratory) served as the foundation for conducting the quantitative study. The objective of this study was to identify new relevant concepts related to the research problem. In this sense, interviews were conducted with 43 employees from four medium and large-sized companies as part of a qualitative study. Subsequently, a quantitative study was carried out by administering a questionnaire to 142 employees within the same companies. Findings suggested that low user skill levels, particularly in using complex and difficult-to-use features, could contribute to the underutilization of advanced features in SOST. A new construct – the awareness of the potential usefulness of advanced features – emerged from this study. The results indicated a positive causal relationship between the awareness of the potential usefulness of advanced features and the intention to use them. Additionally, personal innovativeness was found to influence performance expectancy and effort expectancy. Moreover, the study highlighted the importance of principal support, representing the support provided by organizational leadership and middle management, in influencing social influence. The research has practical implications for organizations, emphasizing the need for employees to be aware of the potential usefulness of advanced features and develop strategic knowledge in utilizing them effectively. Recommendations for future research included expanding the study to different types of organizations, exploring moderating variables, and using alternative approaches to measure variables like awareness of potential usefulness and strategic knowledge.

Keywords: UTAUT, feature-rich software tools, underutilization, awareness of the potential usefulness

Descobrindo o Potencial: Uma Investigação sobre a Subutilização de Funcionalidades Avançadas em Software Padrão de Escritório

Resumo

Este estudo analisou a subutilização de funcionalidades avançadas em ferramentas de software ricas em funcionalidades, focando especificamente as ferramentas padrão de software de escritório (SOST). O objetivo foi identificar as causas da subutilização e explorar as implicações para organizações, gestores e funcionários. A pesquisa adotou o modelo Unified Theory of Acceptance and Use of Technology (UTAUT) como estrutura teórica e incorporou variáveis adicionais específicas para o contexto das SOST. Um estudo qualitativo (exploratório) foi desenvolvido com o objetivo de identificar novos conceitos relevantes relacionados com o problema de investigação. Neste sentido, foram realizadas entrevistas a 43 colaboradores de quatro empresas de média e grande dimensão como parte do estudo qualitativo. Subsequentemente, foi realizado um estudo quantitativo, administrando um questionário a 142 funcionários das mesmas empresas. Os resultados sugeriram que baixos níveis de competências dos utilizadores, especialmente no uso de funcionalidades complexas e de difícil utilização, podem contribuir para a subutilização das funcionalidades avançadas das SOST. Um novo conceito – a consciência da utilidade potencial das funcionalidades avançadas – surgiu deste estudo. Os resultados indicaram uma relação causal positiva entre a consciência da utilidade potencial das funcionalidades avançadas e a intenção de utilizá-las. Além disso, foi constatado que a inovação pessoal influencia a expetativa de desempenho e a expetativa de esforço. O estudo também destacou a importância do apoio da liderança, representando o apoio fornecido pela liderança organizacional e pela gestão intermediária, no efeito da influência social. A pesquisa tem implicações práticas para organizações, enfatizando a necessidade de os funcionários estarem cientes da utilidade potencial de funcionalidades avançadas e desenvolverem conhecimentos estratégicos para utilizá-las de forma eficaz. Recomendações para pesquisas futuras incluem a expansão do estudo para diferentes tipos de organizações, a exploração de variáveis moderadoras e a utilização de abordagens alternativas para medir variáveis como a consciência da utilidade potencial das funcionalidades avançadas e o conhecimento estratégico.

Palavras-chave: UTAUT, ferramentas de software com recursos avançados, subutilização, consciência da utilidade potencial

Contents

List of Abreviations

AF – Advanced Features

AMOS – Analysis of Moment Structures

APU – Awareness of the Potential Usefulness

BI – Business Intelligence

CAD – Computer-aided Design

CFI – Comparative Fit Index

COVID-19 – Coronavirus Disease

CSE – General Computer Self-efficacy

CSV – Comma-separated Values

D – Discrepancy

EE – Effort Expectancy

EIM – Equity Implementation Model

ERP – Enterprise Resource Planning Software

FC – Facilitating Conditions

GS-SE – General Technology and Simple Knowledge

IFI – Incremental Fit Index

IS – Information Systems

IT – Information technology

IU – Intention to Use

KMO – Kaiser-Meyer-Olkin

M – Mean

MS – Microsoft

OECD – Organization for Economic Cooperation and Development

PE – Performance Expectancy

PI – Personal Innovativeness

PIIT – Personal Innovativeness in the Domain of Information Technology

PS – Principal Support

RFID – Radio Frequency Identification

RMSEA – Root Mean Square Error of Approximation

SC-SE – Specific Technology and Complex Knowledge

SD – Standard Deviation

SL – Self-regulated Learning

SME – Small and Medium-Sized Enterprises

SOST – Standard Office Software Tools

SPSS – Statistical Package for the Social Sciences

SSE – Specific Computer Self-efficacy

SS-SE – Specific Technology and Simple Knowledge

TAM – Technology Acceptance Model

TPB – Theory of Planned Behavior

UI – User Interface

URM – User Resistance Model

UTAUT – Unified Theory of Acceptance and Use of Technology

UTAUT2 – Unified Theory of Acceptance and Use of Technology 2nd Model

VBA – Visual Basic for Applications

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1. Introduction

Organizations invest in information systems to improve productivity and obtain innovation gains (Chandra et al., 2020), however, that can only be achieved if these systems are efficiently adopted and used. As a business consultant in small and medium enterprises, I always wondered about the reasons for the underutilization of available resources for administrative tasks, particularly regarding widely at-hand productivity tools like spreadsheets, word processors, email, and agenda managers, among others (Bhavnani et al., 2000; Bhavnani & John, 1996; Doane et al., 1990; Nilsen et al., 1993). From my point of view, there is a gap between what administrative employees, salespeople, managers, and others who perform any administrative task can do to make the most of those tools and what is effectively done in practice (Cockburn et al., 2014). Consequently, it could result in lower efficiency than what could be achieved if these tools were used in a way that took advantage of their full capabilities and functionalities.

This problem does not exclusively involve clerk-type functions. It is also observable in almost every function that involves any administrative or activity that manipulates information, like filtering data, reporting, data analysis, word processing, electronic mail or agenda management, and many others (Ferreira et al., 2010). The need for accessing and manipulating data is so common in organizations that even some operative functions in industrial plants require specific information management skills to perform their job in a productive way, even though this is not the major role in their functions. Nevertheless, many jobs within organizations have information and data as the primary focus of their activities. An accountant, for example, spends most of their time working with numbers from different data sources, like bank statements, invoices, balance sheets, and financial reports. Marketing managers and financial managers devote a significant share of their time to analyzing data and producing reports. The function of a salesperson implies contacting potential and actual clients most of the time, but it also requires long periods of producing reports and obtaining information from databases. This means that not only those workers with purely administrative functions in organizations play an important role in what comes to performing administrative tasks. Nowadays, people in most jobs need to be able to access, interpret, transform, and distribute information. The way they do it can make a significant difference in terms of productivity.

The productivity gains resulted from an automated or partially automated task could be very significant for both the organization and the individual (Cockburn et al., 2014). The following real cases, resulting from my own consultancy experience, illustrate a productivity increase by developing some task automation routines using available software tools:

- An administrative worker in a freight transport sector company used to spend 4 to 5 days per month in the process of calculating the shipping costs of every delivery and pickup for each of their hundreds of clients. As most clients could have dozens to hundreds of dispatches per month, the total amount of records would easily reach the thousands mark. To complicate it even more, the price was calculated after consulting a dozen price tables, as each client could have its own price table and because many services and different price-related variables were involved. The implemented solution was a spreadsheet with a model that included all price tables and calculations for each client. All shipment data could now be exported from the company's ERP as a CSV file and then pasted into the new spreadsheet model, which would do all the calculations automatically. The whole process would take a few minutes only, which is a huge improvement in productivity and convenience for the person involved.
- A human resources department is continuously filling several forms and templates with data from the company's employees. Although they have developed many templates with the help of a word processor, the introduction of data in the fields was still a manual process that took a lot of time. The implemented solution consisted of changing all the forms and templates and converting all the fields to mail merge fields of a word processor, on the one hand, and connecting them to the employees' data that were also put in lists created in a spreadsheet. This way, the same data located in a central spreadsheet would become available to every form and template connected to it. Instead of having to manually fill every document, the human resources professionals only needed to update employees' data occasionally. Even though there has not been a calculation of the saved time in this process, one can realize that the increase in productivity was great.
- The accountancy department of a company needs to perform the bank reconciliation procedure at the end of each month. This activity implies the verification of all bank movements by comparing all bank account statements with the accounting records and evaluating if there is any mismatch. Bank reconciliation is a practice that permits identifying unusual transactions that could be caused either by error or fraud and has many advantages for the organization. It is an essential internal control practice, but a very long and tiring process. In order to improve and automate part of this procedure, a spreadsheet was created with two main sections: the bank statements fields and the accountancy records fields. Data from digital bank statements can be easily pasted to the correspondent fields, as well as data from the accountancy records. The two lists are then compared to each other, using some Visual Basic for Applications (VBA) code, highlighting mismatches and suggesting possible correspondences. At this stage, the

accountants would have only to check for these differences and not scan all the statements and records. The saved time has not been estimated, but it is clear that there was a significant increase in productivity and convenience in what concerns this particular procedure.

These tools – spreadsheets, word processors, email and agenda managers, and others – are part of the feature-rich software category, which can be described as software applications that offer large feature sets that can reach hundreds or thousands of commands (Kiani et al., 2020) and can be challenging to learn and use due to their complexity (Lafreniere et al., 2014). We have designated this subset of feature-rich software tools for the office productivity as standard office software tools (SOST).

Considering the possibility of a productivity gap in the utilization of complex computer tools, as identified by some authors (e.g., Bhavnani et al., 2000; Bhavnani & John, 1996; Cockburn et al., 2014; Doane et al., 1990; Nilsen et al., 1993), this research aims to explore the causes of this situation. Therefore, its main goal is to identify the causes of the underutilization of standard office software tools in organizations that would promote efficiency.

Despite these tools' popularity, their most advanced features are underused (Bhavnani et al., 2000; Bhavnani & John, 1996; Doane et al., 1990; Nilsen et al., 1993), making it a problem of technology acceptance and use. Therefore, some constructs used in technology acceptance models may be relevant to this research. This is the case of the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Theories of organizational change can also provide a conceptual framework to study administrative inefficiency due to the underutilization of standard office software tools. For example, the Five Key Change Beliefs (Armenakis et al., 1999) is a framework that can be used to assess an organization's readiness for a change.

Our research question is "What are the reasons that would explain the employees' underutilization of SOST and the resulting inefficient execution of administrative tasks in organizations?". Therefore, it is expected that this research can contribute to the theory by identifying variables that can help understand the causes of underutilization of feature-rich applications and can be included in a recognized model of technology adoption and use.

The structure of this report includes a literature review where we start by identifying sources that recognize the productivity gap concerning these information systems, and then to highlight relevant theories about (1) learning, skills and computer self-efficacy, (2) technology acceptance and use, and (3) organizational change. After that, we present the research design, which includes a qualitative and a quantitative study. These studies are described separately in correspondent chapters, with the definition of objectives, methodology, and with data analysis. The results are discussed next, followed by the conclusions, limitations, and recommendations for future research resulting from this research.

2. Literature Review

In our point of view, the study of the inefficient use of technological tools in organizations, such as spreadsheets and word processors, involves a multidisciplinary approach. Several fields of study should be taken into consideration for this purpose since there can be different explanations for this phenomenon. One field to analyze is technology acceptance and adoption (e.g., Davis, 1989; Venkatesh et al., 2003, 2012, 2016). What is at stake in this study is not a matter of using these software tools. In fact, they are already in widespread use in organizations. The issue is about the inefficient use of these tools, which can be related to the non-use or rejection of the advanced features of these computer programs that would increase individual productivity. Another dimension to study is related to the skills employees need to use these tools effectively, i.e., the computer self-efficacy (e.g., Agarwal et al., 2000; Compeau & Higgins, 1995), and the impact it could have on the ability to learn new advanced software features and execute them. Also, some conditions may facilitate the process of SOST's advanced features use, such as management support, technical assistance, and training. It is also relevant to analyze the literature on Organizational Change (e.g., Armenakis et al., 1999) because the use of advanced features that can improve administrative tasks execution efficiency may imply a change in organization's processes and practices.

2.1. The Productivity Gap

Organizations tend to evidence a productivity gap in what concerns the execution of administrative tasks and one of the reasons for this is due to a lack of task automation or to the inefficient use of standard office software tools such as word processors and spreadsheet applications (Cockburn et al., 2014). This problem has a multidisciplinary nature. Therefore, this problem can be analyzed through different lenses in order to investigate its implications, and these are (i) productivity, (ii) business process automation, (iii) task automation, (iv) individual skills and performance, (v) training and learning, (vi) resistance to change and to adopt new information systems, and (vii) organization policies towards all of these factors.

The introduction of information technologies (IT) in businesses creates an expectation for productivity improvement (Ferneley & Sobreperez, 2006) and can have an impact on individual-level outcomes, like productivity (Graen et al., 1982; Hackman & Lawler, 1971; Maxwell, 2008; Oldham et al., 1976).

Since information technology is complex and implies a period of learning and adaptation, it is expected that technological change in organizations has a major impact on the productivity of highly skilled workers, but not as much among low-skilled employees (Matthes et al., 2014). This means that highly skilled workers are expected to perform well regarding administrative tasks automation, while other employees may have to benefit from extra efforts of training and support teams.

Although a new information system can be regarded as a good thing for both employees and the organization, it can only improve productivity if employees in organizations accept and use them (Venkatesh et al., 2003). However, a significant number of people reject or avoids using it (Bhattacherjee & Hikmet, 2007; Klaus & Blanton, 2010; Meissonier & Houzé, 2010). In fact, users can have different resistance behaviors like sabotage, non-usage, non-compliance, and workarounds (Dickson & Simmons, 1970; Ferneley & Sobreperez, 2006).

The main objective of technology is to replace mechanical power for slow and error prone human handiwork and this can be achieved whether the technology is tractors, assembly lines, or spreadsheets (Autor, 2015). In the case of software technology, its ultimate goal is to improve user efficacy in completing tasks (Ozkaya, 2020). However, several authors argued that despite the widespread use of information systems in firms and other organizations, in particular word processors, spreadsheets, and CAD systems, their usage is far from optimal, even for experienced and frequent users (e.g., Bhavnani et al., 2000; Bhavnani & John, 1996; Doane et al., 1990; Nilsen et al., 1993).

Available software tools are continuously evolving with new advanced features, but individuals who excel in mastering these functionalities are rare exceptions. Frequently, users learn to use these tools just enough to satisfy their work needs, but in a rather inefficient way, therefore people tend to perform repetitive work instead of spending some time creating more efficient ways (Nilsen et al., 1993). Thus, people seldom use more efficient features, such as Macros, to automate frequent and repetitive tasks.

Nilsen et al. (1993) also evidenced that experience was not a guarantee to learn even the basic features of a complex system. The same was argued by Bhavnani et al. (2001), who added that the redesign of complex systems would not solve the problem either. People that increased in computer systems expertise started first to fully manage simple operations before they moved to the most advanced features (Doane et al., 1990). In their study about the UNIX operating system, comparing different level skills, Doane et al. (1990) found that experts outperformed intermediates and novices in most domains, namely comprehension sufficiency, production sufficiency, magnitude of production lag relative to comprehension, and breadth of knowledge in the system. Novices tend to achieve strong knowledge of some modules, while showing no interest in others, even though they know other functionalities exist.

In research about the usage of CAD systems, Luczak et al. (1991) found that even fully trained users showed low performance levels, friction, frustrations, and reduced creativity. In another CAD study, the lack of strategic knowledge was pointed out as the reason why users did not change their suboptimal strategies (Bhavnani & John, 1996). Following this evidence, although serendipitous findings can happen, strategic knowledge was recommended to be taught explicitly. Nevertheless, another view emerged in a study by Charman and Howes (2003). They considered that users do not dedicate enough time to learn because they are focused on the tasks' execution. This way, instead of teaching strategies explicitly, they suggest that users should generate themselves strategies during task execution in order to be able to replicate this process autonomously in the long term. However, the problem of not using the most advanced features and the consequent inefficiency remains, as exemplified by Spiech (2008):

> What can be automated using spreadsheets, databases, macros, etc.? Eli and Peyton should think about the processes they use to complete these tasks. Although he spends less time compiling and entering numbers during the budget process, Peyton still spends 400 hours per year on this activity and could probably automate it further to free up time for more analysis. (Spiech, 2008, p. 47)

Even though system users can have a deep knowledge of tasks and tools, more is needed to make them more efficient (Bhavnani et al., 2000), such as learning strategies in the layers between tasks and tools. An example of this is the aggregate strategies in opposition to sequence-by-operation strategies. Drawing all the elements of several objects individually and then assembling them can be considered a process using a sequence-by-operation strategy. Nevertheless, it is much more efficient to use an aggregate strategy where all the elements of the first object are designed, then grouped, and finally to make multiple copies to create the other objects. However, Bhavnani et al. (2000) state that despite the higher efficiency of aggregation strategies, these are not often used even by advanced users. This means that most users do not obtain strategic knowledge spontaneously. Two causes might explain it: users do not know the efficient strategies, or users do know the strategies but do not use them. According to their study, even when users do know the strategies and do not consider them inefficient and recognize they save time, previously learned habits are difficult to overcome, meaning that old strategies remain in use.

In order to be able to assess the expertise needed to use a software system with efficiency, three expertise levels were considered by Grossman and Fitzmaurice (2015): (i) usage of user interface (UI) components, (ii) command efficiency and vocabulary, and (iii) task skills (Grossman & Fitzmaurice, 2015). User interface components are important to access software features, which is the lower level of the expertise dimension. The next level is the usage of commands and vocabulary. A skilled novice may be efficient at using commands, but not at completing tasks. It implies having strategic knowledge in order to complete tasks efficiently, which is done at the expert level only. The research conducted by Grossman and Fitzmaurice (2015) about this higher-level learning for complex applications was performed in the context of *in situ* identification of expertise. Most studies on the topic found in the literature were experimental studies in a lab environment, which suggests there is room for further research.

2.2. Learning, Skills and Computer Self-Efficacy

Self-efficacy can be defined as the belief in one's ability to perform a specific behavior (Bandura, 1986), and it is considered to have a significant impact on task performance (Gist, 1986). Studies confirmed that individuals with high levels of self-efficacy had better job performance than those with lower levels (Haddad & Taleb, 2016; Tims et al., 2014). Others found that individual self-efficacy positively influenced work engagement (Salanova et al., 2011; Xanthopoulou et al., 2009b, 2009a), which in turn contributed to job performance (Lin et al., 2016; Pourbarkhordari et al., 2016; Shimazu et al., 2015).

Computer self-efficacy refers to an individual's perceptions of an ability to use computers in the accomplishment of a task (Compeau & Higgins, 1995), and it influences information technology and information systems adoption and use (Compeau et al., 2007; Karsten et al., 2012). Individuals are significantly influenced by computer self-efficacy regarding their expectations of the outcomes of using computers, which can trigger emotional reactions, ranging from affect to anxiety (Compeau & Higgins, 1995). Computer self-efficacy is also impacted by learning performance (Chen, 2017). As computer self-efficacy requires learning new skills, it is expected that older individuals face a decrease in their own self-efficacy, because the cognitive ability to learn reduces with age (Hämäläinen et al., 2015).

Two main forms of computer self-efficacy have been identified in the literature: general computer self-efficacy (CSE) (Compeau & Higgins, 1995) and specific computer self-efficacy (SSE) (Agarwal et al., 2000). This differentiation is relevant since CSE is about user perceptions regarding general computer skills to perform an undefined task, while SSE refers to specific skills in a specific software, such as spreadsheets, needed to execute a certain task. Therefore, specific computer self-efficacy is a stronger predictor of outcomes from task execution (Marakas et al., 1998).

Compeau and Higgins (1995) argue that there are three dimensions of self-efficacy perceptions. The first one is psychological confidence/motivation that could help users overcome or give up in difficult situations. This motivator can extend or reduce the user's performance beyond the possessed skill. This could be influenced by an internal trait or just by the perception of being able to get help from others (Thatcher et al., 2008). The second dimension is the generalizability/specificity and refers to the extent to which perceptions of self-efficacy are related to specific situations. Since the use of computers is becoming increasingly complex and requires specialized skills, it means that using each computer program represents a skill in itself, which implies specific research (Compeau & Higgins, 1995; Murphy et al., 1989). The skills obtained from the use of a computer program do not necessarily mean they can be used in a different software. This demands the distinction between general computer self-efficacy and specific computer self-efficacy. The third dimension is about the perception of skill or knowledge the user needs to complete the task at hand. While CSE is about the individual perception of own ability to use a computer (Compeau & Higgins, 1995), SSE concerns the cognition of the ability to use specific software to execute a particular task (Agarwal et al., 2000). Considering this, psychological confidence/motivation is the major driver of general computer self-efficacy, while specific computer self-efficacy is mostly influenced by skills (Gupta & Bostrom, 2019).

Motivation can also be an outcome of information systems implementation. If technology is not working as expected, workers' motivation will decrease (Palvalin, 2016). Nevertheless, Torres and Sidorova (2015) claim that reducing the business process configurations complexity with the use of technology can enhance participants' motivation. Individuals with higher levels of computer self-efficacy obtained more enjoyment and were less anxious about computer use (Compeau & Higgins, 1995). This implies that these individuals are more motivated than those with lower levels of self-efficacy and that they can achieve better results in the use of computers and also in training (Compeau et al., 2007). Hedonic motivation (e.g., enjoyment) is presented by Venkatesh et al. (2012) as very relevant in consumer technology.

In comparison with more generalized self-efficacy, task-specific self-efficacy has a stronger effect on job performance (Hysong & Quiñones, 1997; Stajkovic & Luthans, 1998). Tasks can be classified as simple or complex (Gupta & Karahanna, 2004) based on (i) experience (the task is complex if the user perceives the task as difficult), (ii) information processing (the task is complex if it produces high information processing), (iii) problem space (complexity is defined by the minimum size of the computer program that is needed), (iv) knowledge required to perform, (v) structure of task (routine tasks are simpler), and (vi) objective categorization (the number of task elements, their relationships, and the changing rate of task objectives) (Gill & Hicks, 2006). A task is as much complex as more knowledge is needed to complete it. Simple tasks can be performed with component skills, such as steering or braking in a car, and complex tasks need particular behaviors to accomplish the desired outcome, such as driving in traffic (Bandura, 1984). Simple tasks require basic software skills, and the center of interest is the steps needed to complete the task using the computer program. This is considered to be static knowledge for a particular system (e.g., making a sentence bold in a word processor). However, complex tasks demand more in-depth knowledge of the business context and of the software tool (Gupta & Bostrom, 2019), such as automating a business process with the use of advanced features of software tools.

Gupta and Bostrom (2019) categorized the existing computer self-efficacy measures by crossing two dimensions: technology type, as specific or general, and task knowledge type, as simple or complex. This approach resulted in four categories of scales: (i) specific technology and simple knowledge (SS-SE); (ii) specific technology and complex knowledge (SC-SE); (iii) general technology and simple knowledge (GS-SE); and (iv) general technology and complex knowledge. The authors have used this classification in a study of students, after they were trained in Excel, by asking them to fill out a questionnaire containing items measuring (i) general computer (GS) self-efficacy, (ii) Excel simple task (SS) self-efficacy, (iii) Excel complex task (SC) self-efficacy, and three constructs from the TAM model (Davis, 1989): (iv) perceived usefulness, (v) perceived ease-of-use, and (vi) behavioral intention. Gupta and Bostrom (2019) found out that SS-SE is relevant for initial adoption as it had the strongest impacts on perceived usefulness and perceived ease of use. The construct SC-SE, despite also having a strong positive effect on perceived ease of use, related negatively to perceived usefulness. They also concluded that it is important to study the SC-SE regarding training outcomes because most of the research in information systems education only focused on command and tool procedure, which is not the correct approach for Excel complex task self-efficacy, for example, which requires advanced training.

An individual's computer self-efficacy can be improved largely by the encouragement of others within the organization, as well as by the way others use computers (Compeau & Higgins, 1995). Researchers highlight the role of some users in the acceptance and use of information systems. For example, "star workers" have been defined as those who make disproportionately large contributions to firm productivity through exceptional task performance (Groysberg et al., 2011). These employees may provide developmental support to colleagues and can disseminate knowledge throughout the organization (Kehoe et al., 2015), which is quite important if others face difficulties in the usage of information systems. However, Compeau and Higgins (1995) claimed that there was a negative influence of support on self-efficacy and outcome expectations. The authors suggested that this can be explained by individuals that are used to call for help when they encounter difficulties, whose problems are solved by others, and do not feel the need to improve their skills because of that, which in turn may affect their perception of their ability to execute those tasks.

Learning feature-rich applications, such as word processors and spreadsheets, is difficult because they have hundreds of commands in their interface (Lafreniere et al., 2014; Mahmud et al., 2020). Therefore, users face difficulties identifying which features are needed to complete their tasks, knowing how individual features work in isolation and with others, and finding them in the interface (Grossman et al., 2009). People often prefer to learn via self-direct exploration and trial-and-error strategies than using widespread online resources, built-in help, and manuals (Carroll & Rosson, 1987; Kiani et al., 2019; Rieman, 1996). Nevertheless, advanced features are quite difficult to learn without guidance, and a self-direct exploration is more prone to errors in the earlier stages of learning, which can cause confusion and frustration (Carroll & Carrithers, 1984). Furthermore, poor learners develop inadequate exploration strategies where they repeat moves with no success, do not pay attention to feedback, and are not able to assess what they have learned (Trudel & Payne, 1995). Cockburn et al. (2014) add that users maintain the inefficient strategies they learned first, which means that it is difficult to change their behavior in order to get a better performance in the execution of tasks. This is a major handicap in the operation of advanced features because these require some degree of expertise, which is about learning specialized methods that allow for more efficient execution of work (e.g., creating Macros in spreadsheets) (Nilsen et al., 1993).

User training is determinant for the successful implementation of information systems (Gallivan et al., 2005). Individuals might have valid reasons not to use a new system if they lack training (Kane & Labianca, 2011). For example, individuals devote less time to learning because they are "task focused" (Charman & Howes, 2003). However, even if they participate in training programs, users can decide not to use their acquired skills, despite the time and cost spent (Baldwin & Ford, 1988), which means the expected benefits of the training concerning the actual use of the new system may not be achieved. This process of user training is affected by individual attitudes and organizational factors (Holton & Baldwin, 2000). Organizational factors are supervisory support, co-worker support, social support, and top management support. Social support helps technology implementation since it originates pressure and an expectation of compliance from others (Compeau & Higgins, 1995; Thompson et al., 2006). Management support is also determinant for the implementation of information systems (Dong et al., 2009). In what concerns the implementation of an information system and the correspondent user training, it is fundamental to carry out supervised activities before and after training, because these will influence the post-training utilization of learned behaviors in task execution (Tai, 2006; Webster & Martocchio, 1995). Individual characteristics are computer self-efficacy, which eliminates anxiety during training (Compeau et al., 2007), and mastery orientation. Mastery-oriented users are more focused on learning and training experiences in order to develop their skills and perform better in their tasks (Garavan et al., 2010). They also seek challenges and are persistent in case of failure (Chiaburu & Marinova, 2005), this way improving the chances to benefit from training and performing their tasks. Bhavnani et al. (2000) identified several reasons that explain why training may fail to improve learning and, consequently, to increase task efficiency performance. Sometimes, efficient strategies are not explicitly taught. In other cases, users overlook their own inefficient strategies, despite the training received, which prevents them from taking action. Lack of motivation is also a reason not to properly engage in training. Finally, if training is perceived as not important and individuals are not encouraged to get follow-up training, there is a problem with an organizational culture that is not fomenting learning. On the other hand, complex tasks demand the acquisition of strategic knowledge, but this is rarely considered in training or, if used, it is with a traditional pedagogical approach that is not suitable for achieving the high cognitive requisites of this kind of knowledge (Garikano et al., 2019).

In order to make training more effective in what concerns the learning of the strategic knowledge that is needed to increase task efficiency, Bhavnani et al. (2001) identified four types of knowledge that should be used in strategic training: (i) users must learn about the existence of specific strategies to execute tasks; (ii) users must learn to identify and choose an efficient strategy to execute particular tasks; (iii) users must know how to execute a strategy by performing all the procedures necessary; and (iv) users must learn to use the strategies across applications.

2.3. Technology Acceptance and Use

Two main models for the acceptance of information systems emerge from the literature. The Technology Acceptance Model (Davis, 1989) is an instrument to predict the user acceptance or rejection of technology in organizations. Although this model was created several decades ago, it is frequently used by the research community when it comes to studying technology and information systems adoption in organizations, and has been subjected to many extensions and some modifications over the years (Marangunić & Granić, 2015). Two of the variables used in this model, perceived ease of use and perceived usefulness, play a mediating role in a complex relationship between system characteristics (external variables) and potential system usage. However, since 2003 a new model was synthetized from the Technology Acceptance Model and several other theories in order to create a Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). In this model (Figure 1), the variables performance expectancy, effort expectancy, and social influence impact use behavior through behavioral intention to use, while facilitating conditions directly influence the use behavior construct. Performance expectancy can be defined as the "degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447). This can be outweighed by effort expectancy or the "degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450). The higher the expected effort to perform a task, the lower the behavioral intention to use it. Social influence is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451).

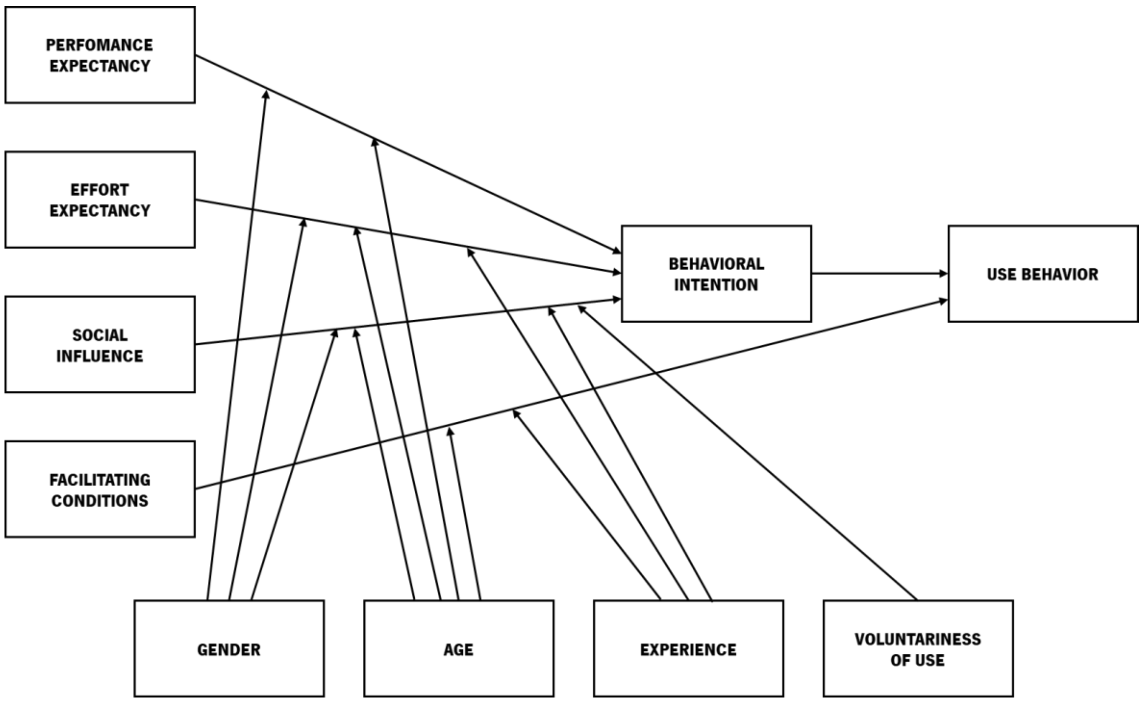

Figure 1. *Unified Theory of Acceptance and Use of Technology*,
adapted from Venkatesh et al. (2003).

This theory was extended in order to pay particular attention to consumer use context with the incorporation of new constructs and became known as UTAUT2 (Venkatesh et al., 2012). Hedonic motivation was introduced in this extension and is defined "as the fun or pleasure derived from using technology" (Venkatesh et al., 2012, p. 161). The facilitating conditions variable was also incorporated and it represents the individual's beliefs in the organizational capacity to support the use of the technology.

Habit was also introduced in the UTAUT2 and is defined as the extent to which users perform automatically after experience and learning.

Other variables have extended the UTAUT or integrated the model with different theoretical models. Hong et al. (2011) added intention to use future features, consistency with user knowledge, and personal innovativeness in their study of user acceptance of agile information systems. Consistency with user knowledge directly impacted comfort with change and indirectly intention to use future features, and was defined "as the consistency of texts and images with users' knowledge and usage conventions" (Hong et al., 2011, p. 250). Perceived risks were integrated into the UTAUT model in the study of end-user acceptance of biometrics conducted by Miltgen et al. (2013). In their research, the perceived risks variable was used considering the concern for data privacy and trust in the technology. Pramatari and Theotokis (2009) used the technology anxiety variable in their research on consumer acceptance of RFID-enabled services, integrating it from another theoretical framework into the UTAUT model. Computer self-efficacy, familiarity with others, peer influence, and superior influence were used in predicting collaboration technology use (Brown et al., 2010) as an extension of the UTAUT framework. Familiarity with others represents the set of norms and expectations around collaboration technologies that individuals working together form as a group. Loose et al. (2013) introduced the construct of perceived threats in their study about the adoption of privately-owned devices for business purposes, extending the UTAUT model. This variable is impacted by perceived business threats, that is "the degree to which an individual believes that the" usage of privately-owned devices for business purposes "is threatening his or her job" (Loose et al., 2013, p. 4). The UTAUT framework was further extended with the introduction of the constructs of time savings, cost savings and training, among other constructs, by Shibl et al. (2013) in their study on the factors influencing a clinical decision support system acceptance. Another extension of the UTAUT model was comprised in the work of Stefi (2015) on the adoption of software components. In this study, the relevance of technical expertise is related to the fact that software developers can create their own code instead of using existing components.

The framework has been extensively applied in studies across a variety of situations that include different types of users, organizations, technologies, tasks, times, and locations (Tamilmani et al., 2021; Venkatesh et al., 2016). In general, research confirmed the relevance of UTAUT and its predictor's main effects. However, many extensions have been added to the model in different applied studies, and Venkatesh et al. (2016) created a Multi-level Framework of Technology Acceptance and Use in order to offer a more comprehensive and complete framework (Figure 2).

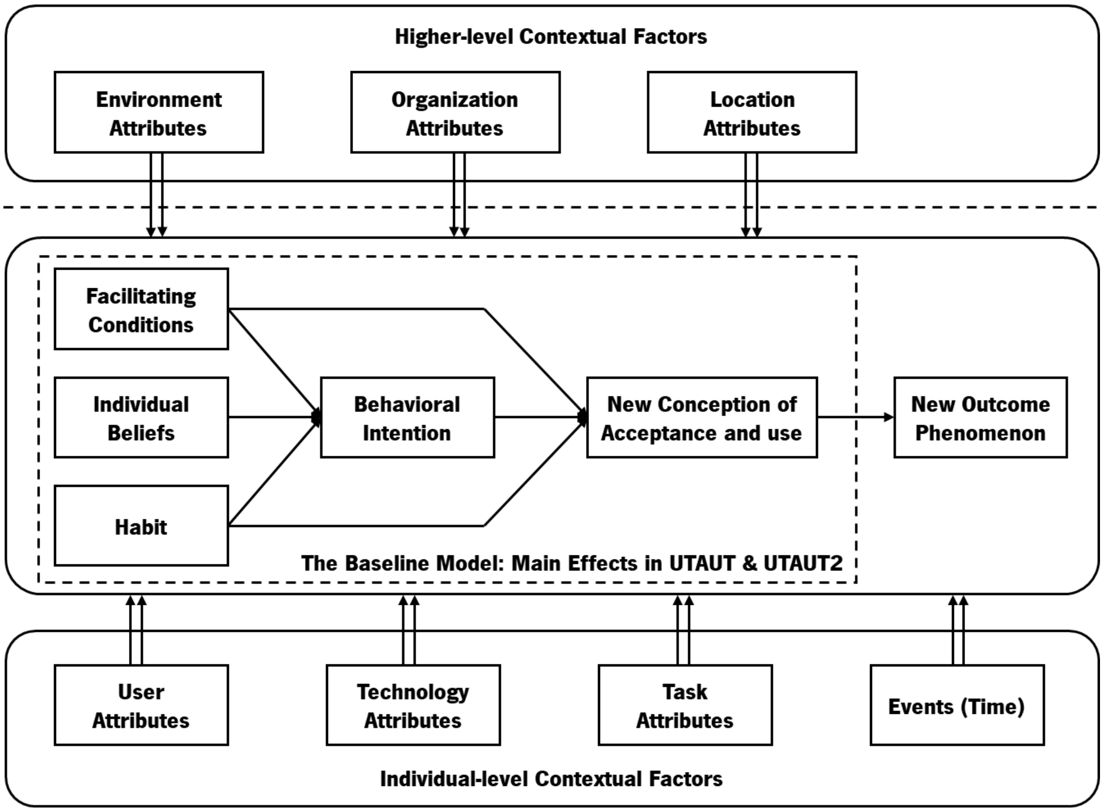

Figure 2. *Multi-level Framework of Technology Acceptance and Use,*
adapted from Venkatesh et al. (2016).

In this multi-level framework, the dimension individual beliefs comprise performance expectancy, effort expectancy, social influence and hedonic motivation, as well as facilitating conditions and habit, influence behavioral intention and technology use and produce the individual outcomes. The model, that emerges from the original UTAUT and its modification, is influenced by environment, organization and location attributes at the higher level, and by user, technology, task and time attributes at the individual level. Tamilmani et al. (2021) further extended the UTAUT2 theory, adding new mediating, external, and internal mechanisms.

Extensive reviews of the UTAUT2 based studies (Tamilmani et al., 2021; Venkatesh et al., 2016) revealed its use in very diversified situations. According to Tamilmani et al. (2021), the model has been cited more than 6,000 times. It was generally mentioned in 503 articles and used as applied, integrated with other theories, or extended with other variables and constructs in 147 articles. It was found in major information systems journals and conferences, in the context of health organizations, public agencies and government institutions, universities and schools, farming, travel, and others. Although it has also been used in firms, most research was conducted in different environments. The technologies studied included electronic health, computer-supported classrooms, smartphone and tablets, social networking sites, internet marketing, mobile messaging, and health and fitness apps, just to name a few. Furthermore, several tasks have been researched, including learning, travelling, use of smartphones and tablets, accessing social media, teaching, messaging, and purchasing.

2.4. Organizational Change

2.4.1. Organizational Change Theory

Advanced technology, including information systems, can influence organizations to promote planned change in order to improve competitiveness (Burnes, 2017; By, 2005; Kotter, 1996). The developments in information technology created new opportunities to improve efficiency and transform the ways firms are organized (Alavi & Yoo, 2009). In a context of intense competition and globalization, it is expected that more firms engage in organizational change in order to achieve their own goals.

Planned organizational change can be defined as a set of deliberate actions that aim at changing the present organizational state to a desired future state (Harigopal, 2006). In this sense, organizational change's main goal is to reach a state of improvement from which the organization shall benefit. Despite the importance of this change, about one-third of change interventions fail to achieve their aspired goals (Blackburn et al., 2011; Meaney & Pung, 2008), and a survey of British executives found that only 38 percent claimed that a change in their organization resulted in high performance (Holbeche, 2006). Holbeche (2006) claims as well that installing new technologies has low success rates, which means that, notwithstanding the relevance of organizational change for organizations, the design and implementation of a change is still a great challenge for businesses. In fact, the change process can be a source of stress for workers (Dahl, 2011), and since they are the main target of most change activities, human resistance to change shall be expected. Organizational change is hard to implement and can take several years to show results, which limits the possibility of monitoring and obtaining feedback for managerial improvement (Stouten et al., 2018).

An employee-centric organizational change model has been developed based on the Five Key Change Beliefs (Armenakis et al., 1999). The aim of this model (Figure 3) is to understand what do change recipients take into consideration when they adopt or reject a change effort. Thus, the insights obtained from this approach can help design a better change process (Armenakis & Harris, 2009) because it highlights the individual motivations to support change initiatives. These change beliefs are: (i) discrepancy, which relates to the conviction that the change is actually needed and that there is a significant gap between a present situation and what it should be in the future; (ii) appropriateness, that is the belief that a particularly designed change is the correct one to address the problem; (iii) efficacy, that is the belief that the change recipients and the organization are capable of implementing the change; (iv) principal support, that refers to the belief that formal leaders are committed to the change process and to their successful implementation; and (v) valence, that is the belief that the change is beneficial to the change recipient. Considering this, the strategic vision should be appropriate and assessed against discrepancy, which will enhance job motivation and organizational commitment.

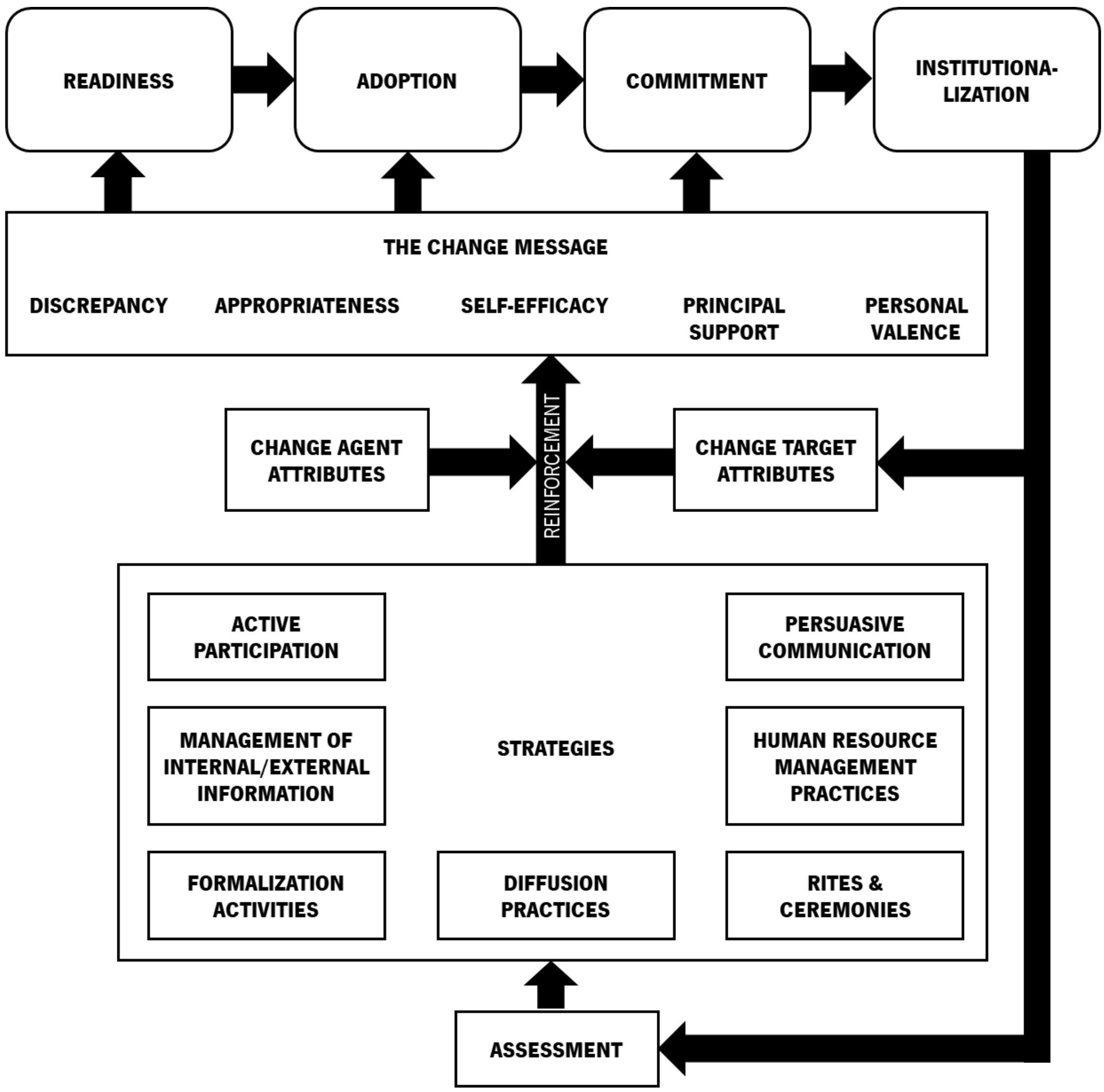

Figure 3. *The Five Key Change Beliefs and Institutionalizing Change,*
adapted from Armenakis et al. (1999).

According to Armenakis and Harris (2009), the involvement of organizational members in the process of identifying and communicating the opportunities for organizational change increases their sense of discrepancy and makes it more likely that appropriate changes are chosen. This active participation in change initiatives also enhances valence and can promote readiness for the change process. Creating readiness for change is an important part of the model. Readiness is the cognitive precursor to the behaviors of resistance to change or support for organizational change. A way to improve readiness is to systematically plan change, which will reduce the change recipient's uncertainty.

To conduct an effective organizational diagnosis, change recipients must believe there is a discrepancy and that a particular change is appropriate to correct the cause of the problems. However, a misdiagnosis could result in selecting the wrong problem to address and in defining a solution that is not appropriate (Armenakis & Harris, 2009).

Influence strategies should be used by change agents to incorporate the five beliefs (Armenakis & Harris, 2009). The first one is organization members' active participation, which has already been addressed. Another strategy is to communicate persuasively through making speeches, sending memos, and other forms of transmitting the message components. This includes managing information from internal and external sources. Other strategies include the formalization of activities, such as by implementing procedures, human resource management practices, diffusion practices, and rites and ceremonies that are part of the organizational culture and can be used to institutionalize the change. A continuous change process assessment must be carried out in order to determine the extent to which change recipients are ready and embrace the institutionalization process. The feedback obtained can be used to reformulate or reinforce the strategies and the change message. These are moderated by the attributes of the change agents (e.g., if they lack credibility, it is likely that change recipients will not believe in the change message) and of the change recipients (e.g., personality, commitment, social differentiation).

2.4.2. Resistance to Change Theory

A phenomenon sometimes associated with change in organizations is resistance (Irani & Love, 2000; Lee & Joshi, 2017). User resistance can be defined as an implicit or explicit opposition expression toward a change (Collerette et al., 1997). In the information systems domain, user resistance has been conceptualized as an adverse reaction (Hirschheim & Newman, 1988) or the opposition of users to the implementation of a new system (Markus, 1983). User resistance can also be a way to identify user level frustrations related to the use of an imperfect information system management (Marakas & Homik, 1996). In any digital change process, the concept of resistance can be paired with the concept of technology adoption (Shirish & Batuekueno, 2021) since lower or inexistent resistance facilitates adoption and use. Many researchers have studied information systems user resistance in particular (Lapointe & Rivard, 2005; Markus, 1983). However, this is an emerging field that requires further investigation (Beaudry et al., 2020).

Lack of tech knowledge and skills was the main explanation for user resistance in the early days of research in this domain. The main focus was the role of the user and their perceptions of self-efficacy to use information systems (Dent & Goldberg, 1999). The second stream of research identified the quality of the implementation as another cause of resistance, which brings the organization and the corresponding process of change, originated by the implementation of a new information system, to the center of attention. Later, it was argued that the expectation of a repeated change in an organization would also cause resistance and potential failure of the implementation (Abrahamson, 2004).

Sabotage tactics are user resistance initiatives that can undermine the implementation of new systems. Taher and Krotov (2016) consider counter sabotage tactics to fight resistance factors and improve chances of success. These counter sabotage tactics include transformational leadership, proper governance, strategic management of business process reengineering, stakeholder impact analysis, reward and deterrence mechanisms, scope management, and communication activities.

Some authors argue that individuals have a natural human propensity to resist change (e.g., Bhattacherjee & Hikmet, 2007; Oreg, 2006), and this can be an explanation for why information systems face resistance to acceptance and sometimes productivity levels are not as high as expected. Additionally, individual differences like personality and demographic variables, as well as situational differences like experience and training, are factors that influence the usage of information systems (Agarwal & Prasad, 1999).

The introduction of a new system can be challenging for individuals. Klaus and Blanton (2010) studied the factors behind user resistance and found the following: (i) individual issues (uncertainty, non-participation in systems design, loss of control, and self-efficacy), (ii) system issues (technical problems and complexity), (iii) organizational issues (organizational culture, communication, and training), and (iv) process issues (skill requirements, workload, and process lack of fit).

Several theories of user resistance emerged from the literature. The interaction between system characteristics and the social context of its use was proposed by Markus (1983). Marakas and Homik (1996) argued that the perception of threats associated with a new information system leads to resistance behavior in individuals. A model of resistance to information systems implementation has been proposed by Lapointe and Rivard (2005), in which initial conditions interrelate with the object of resistance, such as system components, to originate a perception of threats that influence resistance behavior. Afterwards, this experience of the system stimulates the next cycle of interactions and behaviors. The equity-implementation model (EIM) was developed by Joshi (1991). In this framework, users evaluate the change created by a new system implementation based on the net equity, which is estimated from the difference between changes in outcomes (increase or decrease in outcomes) and changes in inputs (increase or decrease in inputs) in the new information system. If the result is a perceived net inequity, resistance behavior shall be expected.

One of the most important and well-established frameworks to study this phenomenon is the User Resistance Model (URM) (Kim & Kankanhalli, 2009). This is a holistic model that was created from an integration of the *Status Quo* Bias theory (Samuelson & Zeckhauser, 1988), the Theory of Planned Behavior (TPB) (Ajzen, 1991), and the Equity Implementation Model (Joshi, 1991). The URM framework (Figure 4) demonstrated that the perceived value of a change, switching costs, and organizational support had significant effects on user resistance. In turn, perceived value is largely influenced by the switching benefits and the switching costs. On the other hand, switching costs were influenced by self-efficacy for change (i.e., skills needed to implement the change) and by colleague opinions, which the later influencing switching benefits. The model did not validate the relationships between organizational support for change and switching costs, between self-efficacy for change and user resistance, and between colleague opinions and user resistance.

Shirish et al. (2021) extended the URM model with technology adoption variables in order to understand user resistance and adoption in post implementation stages of information systems change initiatives in organizations. They have used the behavioral intention to use, a construct that derives from the UTAUT2 technology adoption model (Venkatesh et al., 2012). In their work, they found that behavior intention to use mediates the relationship between switching costs and information systems use, and between switching costs and information systems user resistance, since switching costs will negatively impact information systems use and will positively impact information systems user resistance.

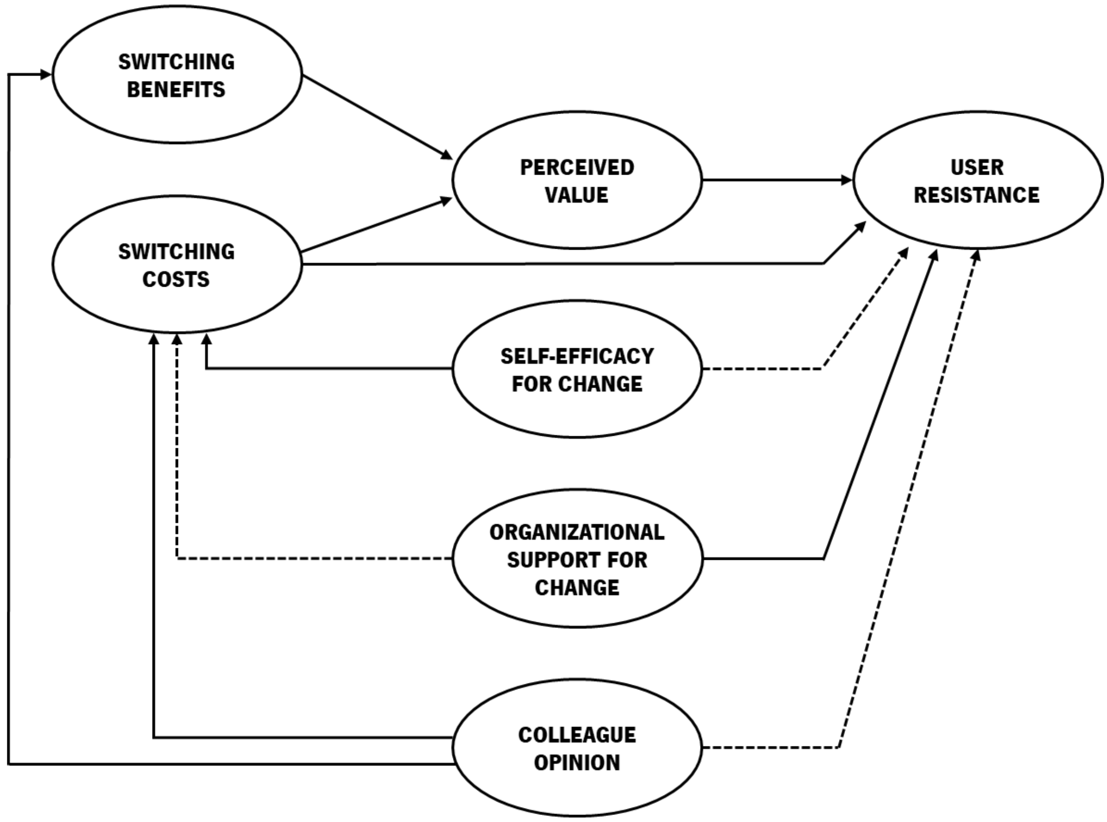

Figure 4. *User Resistance Model*, adapted from Kim and Kankanhalli (2009).

3. Research Design

3.1. Research Questions

The literature review suggests a persistent productivity gap originated from an inefficient use of computer programs (Cockburn et al., 2014). This inefficiency occurs significantly in administrative tasks execution with the use of feature-rich software. Learning these applications is difficult since they offer hundreds of commands (features) throughout the interface (Mahmud et al., 2020). Most of these are routine tasks that users perform regularly. However, despite the widespread use in organizations of feature-rich software, such as the SOST, the literature suggests that their operation is often limited to their basic functionalities (Bhavnani et al., 2000; Bhavnani & John, 1996; Doane et al., 1990; Nilsen et al., 1993). This means that advanced features, such as Macros and VBA (Visual Basic for Applications), which may contribute to automate tasks with the help of SOST (Alexander & Kusleika, 2019; LeBlanc & Galbreth, 2007; Walkenbach, 2010), may not be used by most employees. This may result in an underutilization of advanced features of those tools that would allow for a more efficient execution of administrative tasks. This issue falls within the theme of acceptance and adoption of technology, as the feature-rich software contains an extensive variety of advanced functionalities that users can choose to use (or not use) to support their tasks within organizations. The potential underutilization of feature-rich applications can have negative consequences for business management. On the one hand, business competitiveness, which relies on efficient resource utilization, may be affected by not taking advantage of tools that enable faster task execution and error reduction (Cockburn et al., 2014). On the other hand, professional training programs may not be adequate if they haven't been designed to address the causes of this underutilization, especially when they fail to consider the necessary strategic knowledge that users need to acquire in order to work efficiently with the software (Garikano et al., 2019).

Unlike other software applications, the operation of feature-rich applications, particularly spreadsheets, relies not only on the user's skills but also on their creativity (Arganbright, 1993) to create automations and other solutions that can enhance the efficiency of their own tasks. Thus, the context of their use is more complex and diverse compared to the use of other software applications with fewer functionalities. These feature-rich applications are widely available in most organizations, and individuals already use them regularly. For example, Microsoft Excel, a spreadsheet application, is used by businesses worldwide (Schwab, 2021). This means that the main issue is not the acceptance and use of these tools, as their adoption is widespread. Instead, the problem lies in the underutilization of the advanced features of these tools or their limited usage. Therefore, current models of technology acceptance and use may be incomplete in identifying the causes of underutilization of feature-rich applications. However, these models could serve as the basis for a new theory that considers the specific nature of feature-rich software applications. Furthermore, most research in the fields of technology acceptance, organizational change, and resistance to change has covered a wide range of computer tools but not feature-rich applications and their unique usage conditions. The context of SOST, which are tools belonging to the category of feature-rich software and are difficult to learn and use (Lafreniere et al., 2014; Mahmud et al., 2020), was selected to conduct this research.

Firstly, it is necessary to confirm the occurrence of an underutilization of advanced features of feature-rich applications in organizations. Although acknowledged in the literature, information on this subject is scarce. Next, considering the specific characteristics of feature-rich applications and the complexity of their usage, it is essential to explore deeper into the context of their implementation to gain a better understanding of the factors involved and to identify potential causes that have not been previously identified. Lastly, the aim is to assess the impact of these factors on the well-established UTAUT model of technology acceptance and usage. Therefore, the following research questions were established to delve into the issue of efficiently utilizing the advanced features of feature-rich applications, using the SOST context:

- RQ1: Is there an underutilization of feature-rich software advanced features in organizations?
- RQ2: Are there any factors related to the utilization of feature-rich software advanced features that have not been explored within the scope of technology acceptance and use?
- RQ3: What are the reasons that would explain the employees' underutilization of feature-rich software advanced features?
- RQ4: What is the impact of the identified causes of feature-rich software advanced features underutilization in the UTAUT model of technology acceptance and use?

The main objective of this project is to explore other causes and identify new variables that can help understand the underlying reasons for the underutilization of feature-rich tools in organizations and the consequences for organizational management, particularly lower productivity. At the same time, it aims to contribute to the enrichment of theories of technology acceptance and adoption, particularly through the UTAUT model.

In order to respond to these research questions, a mix methods approach was designed with a qualitative study preceding a quantitative one. Therefore, the specific research objectives, which have been formulated in accordance to relevant topics previously identified in the literature review, are presented separately for each study.

The results of this study may contribute to the improvement of management processes related to the utilization of advanced features, which can have a positive impact on task execution efficiency, individual productivity, and ultimately, organizational outcomes. Therefore, the aim is to expand knowledge in this matter that affects organizations at three levels: (i) at the employee level, where more efficient performance of administrative tasks is expected; (ii) at the managerial level, where motivation, support, training, and monitoring of efficient employees are needed; and (iii) at the organizational level itself, which will be more efficient and productive if the advanced features of feature-rich tools are regularly used for the efficient and effective execution of administrative tasks.

3.1.1. SOST and their Advanced Features

The main focus of this research is the limited use of SOST's advanced features and their causes. Therefore, it is important to identify what are these tools' advanced features and to define each one. For that purpose, a list of software tools is presented (Table 1), covering the main categories of programs used: spreadsheets, word processors, electronic mail, and presentation programs. There are several brands in the market for these tools. For this analysis simplification, the Microsoft Office tools will be used, since this is the leader package in the market, which accounts for 48.08% of the market share (Statista, 2022) and also because these are present in the companies that constituted the sample for this research.

Table 1. *SOST and correspondent advanced features examples.*

SOST examples	Advanced features examples
MS Excel	Formulas and Functions; PivotTables; Macros; VBA; Power Query; Power BI
MS Word	Mail Merge; Templates; Macros; VBA
MS Outlook	Message Rules; Templates; Macros; VBA
MS PowerPoint	Templates; Macros; VBA

These reference advanced features were obtained from the Microsoft Office Specialist certification programs (Microsoft Corporation, 2022d), which training contents are at the expert level, that applies only for advanced features use. Appendix 1 presents a description of each selected advanced feature.

This list does not represent the full set of advanced features available in SOST. However, it covers all the advanced features identified by the participants in the first part of the study – the interviews.

3.2. The Population Studied

There is a widespread use of SOST in businesses across all sectors and regardless of firms' size (Financial Post, 2021; Schwab, 2021). In fact, word processors, spreadsheets, and other SOST, are commonly used in companies to perform an extensive set of tasks (Financial Post, 2021). This widespread use of SOST in businesses was the reason why this category of feature-rich software was chosen for this research. Considering that smaller firms may not have many employees using SOST and, particularly, its advanced features, it was decided to define a population composed of medium and large firms operating in Portugal. Therefore, it has been considered that medium and large firms were a better option to obtain a critical mass of users and to conduct a broad analysis on the subject.

The classification criteria used for choosing the firms was based on the SME (small and medium-sized enterprises) definition from the European Commission recommendation 2003/361 (European Commission, 2003). This definition states that a medium-sized company has a staff headcount between 50 and 249 and also a turnover of up to 50 million euros or a total balance sheet of up to 43 million euros. Large companies are those that have higher values than these ceilings. According to this definition, companies that are part of a larger group need to include the data for the group as well.

3.3. Selection of the companies

The companies were selected strategically according to their relevance to the research objectives. As the productivity gap related to the inefficient use of standard office software tools is a phenomenon that has not been studied in depth, the selection of companies will have to consider organizations that will fit in this category. As a business consultant, the researcher has a long experience dealing with companies where this productivity gap can be detected, at least within the scope of past interventions focusing on administrative tasks improvement and automation. This experience provides confidence in the process of searching and selecting companies for this particular purpose.

The selection of the companies was based on non-probability convenience sampling (Yin, 1994) and judgement sampling (Taherdoost, 2016) methods. This was the chosen methods to take advantage of the researcher's business contacts and his familiarity with the firms involved, particularly in what concerns the acknowledgment of the existence of numerous SOST users that could turn into potential participants in the research. These sampling methods were considered adequate to obtain primary data, as the need to explore the causes of SOST's advanced features underutilization implies. Considering that smaller firms may not have many employees using SOST and, particularly, its advanced features, it was decided to define a population composed of medium and large firms operating in Portugal. Moreover, the aim of this research is not to generalize results about the population as a whole, but to make generalizations at a theoretical level, known as analytical generalization, where researchers attempt to extend a specific set of results to a broader theory (Yin, 1994).

Four companies were selected from different business fields (auto parts manufacturing, boats manufacturing, building materials wholesale, and energy and telecommunication services), different sectors (industrial, commercial, and services), including national and international capital sources, so that diverse contexts could improve the chances of achieving relevant results.

All selected firms are located in northern Portugal. For confidentiality purposes, their names were coded. Company SP operates in the building materials wholesale field and is a medium-sized company of Portuguese capital. This company is the national leader in its segment and has points of sales in several locations in the country. Most of its employees (#151) are based at the headquarters, where the research was conducted. Company BM is a boat and boat parts manufacturer from a well-known international brand. It is a large company and part of a group of companies of American capital. In their local premises they have a plant and administrative offices, where this research took place. Company PS is a large Portuguese company operating in the energy and telecommunication services. Aside from their strong presence in Portugal, they also operate in France and Angola. PS's headquarters is composed by a large warehouse and administrative offices, where the participants in this research work. Finally, Company TW is a large German company that is part of an international group. They manufacture auto parts for major brands. The research was conducted in one of their locations in northern Portugal, that include a plant and the correspondent office building. The size classification of each one of these companies is presented in Table 2, based on information obtained from the Bureau van Dijk (2020) database.

Table 2. *Selected companies – company size classification in 2020.*

Company code name	Number of employees	Turnover (million euros)	Size classification
SP	205	43.7	Medium
BM	364	40.7	Large
PS	430	49.4	Large
TW	881	122	Large

The data presented in Table 2 refers only to the companies' units selected for this study in the Portuguese territory. They do not account for consolidated group data, meaning that the corporate groups of Company BM and Company TW employ a higher number of people and benefit from a higher turnover than the numbers in the Table. However, this fact does not change their size classification, that is already set as "large".

4. Exploring the Causes of Feature-Rich Software Advanced Features Underutilization - a Qualitative Approach

This chapter is about the first study – the qualitative approach to explore the causes of feature-rich software advanced features underutilization, using the context of SOST's use. The qualitative study serves as the foundation for conducting the quantitative study. The objective of this study is to identify new relevant concepts related to the research problem. There is an exploratory nature for this research that implies this qualitative approach to gain a better understanding of the complex nature of the individual use of technology practices. Additionally, this study aims to explore a subject that has been given relatively little attention in the context of feature-rich applications. The objective is to incorporate additional variables into the UTAUT model, which may arise from the findings of the qualitative study, along with existing constructs identified in the literature review and validated during the interviews to be conducted in the qualitative study.

The following sections will cover the objectives, the methodology applied to the qualitative study and the description of the sample used.

4.1. Objectives

In the qualitative study, we intend to explore users' perceptions on several concepts related to the topic of this investigation. The following research objectives have been defined with that purpose:

1. Exploring if people in organizations understand they need SOST's advanced features to be more efficient in their jobs.
2. Analyze the impact of skills and self-efficacy levels on the effective use or non-use of SOST's advanced features.
3. Find out how the organization's policies and top management's actions impact the effective use of SOST's advanced features.
4. Explain how influence from co-workers may cause an effective use or non-use of SOST's advanced features.
5. Describe how personal factors and individual traits may influence an effective use or non-use of SOST's advanced features.
6. Identify other potential barriers and enablers that may influence the effective use or non-use of SOST's advanced features.

Objective 1 is about to clarify if employees recognize SOST's advanced features as appropriate to satisfy their needs to execute administrative tasks efficiently.

Objective 2 intends to analyze if employees are skilled enough and capable of taking advantage of the SOST's advanced features.

Objective 3 addresses the potential impact of top management actions and how this affects the use of SOST's advanced features.

Objective 4 is to analyze if other people play a role of influence in the use of SOST's advanced features.

Objective 5 is to explore if some individual traits or characteristics can affect the usage of those advanced features in a positive or negative way.

Finally, objective 6 was established, on the one hand, to explore the barriers that people face in terms of using those advanced features of SOST, and on the other hand, to identify the benefits that people pinpoint in the use of those tools.

The attaining of these objectives will help achieving a detailed explanation of the advanced features underutilization in the use of feature-rich software.

4.2. Methodology and Data Collection Instrument

A qualitative approach has been chosen for this first study. This methodology was considered the most adequate because of the exploratory nature of this stage and the corresponding objectives. Despite extensive research in the field of technology acceptance and use, the underutilization of software advanced features, such as those available in SOST, is yet to be explained. Therefore, there was the need to identify other possible concepts or constructs not included in the current models and that might contribute to theory in this field. Specifically, we intend to use the UTAUT theory as a starting point to explore the theme and related concepts from diverse fields in order to identify other possible dimensions that might extend the theory to cover the particular characteristics of feature-rich software advanced features acceptance and use. Therefore, this bottom-up approach is about starting from the observation of social phenomena towards generalization and theory. This methodology generates and uses qualitative data to explain the subjective meaning of systems and by understanding that subjective domain (Gill &

Johnson, 1997), which is the aim of this part of the study by trying to interpret new meanings from data gathered with semi-structured interviews.

Qualitative interviews are used "to gather descriptions of the life world of the interviewee with respect to interpretation of the meaning of the described phenomena" (Kvale, 1983, p. 174). Thus, the goal of these qualitative interviews is to observe the research topic from the perspective of the interviewee and then to understand their own views, since we need to further explore the themes that surround the topic of this research – explaining the ineffective utilization of standard office software tools. The instrument used for this purpose is the semi-structured interview. As the primary objective of this study is to gain a deeper understanding of the individual participant's viewpoint rather than seeking a broad and generalized understanding of a phenomenon, semi-structured interviews become the favored method of data collection (McGrath et al., 2019).

The key advantage of semi-structured interviews is that they allow for a focused interview while providing the investigator with the flexibility to explore relevant ideas that may emerge during the conversation. In this process, interviewers possess a fixed set of questions but retain the freedom to modify their sequence and supplement them with explanations and examples when necessary (McKernan, 1996; Robson, 2002). Additionally, they have the option to include open-ended questions that are relevant to the specific context of the interview. This autonomy in exploration can significantly enhance the overall understanding of the subject matter.

The questions applied in the interview script (Appendix 2) included the concepts and constructs used in the UTAUT model and in the 5 Key Change Beliefs frameworks, as well as other relevant concepts identified in Table 3.

4.3. Sampling Process

A total of 43 individuals participated in the qualitative study – 13 for SP and 10 for each of the remaining companies. The participants were selected by human resources managers after being briefed with the objectives of the research and defined the criteria for this selection. These mandatory criteria were (i) the participant's current use of SOST in their job functions, (ii) the inclusion of participants from different job functions and departments, including managers and non-managers, (iii) a balanced distribution of male and female participants, and (iv) a random selection of participants regardless of their usage levels of

SOST's advanced features. This strategy served the purpose of including enough diversity in the sample, so that different perspectives could arise from the interviews.

4.3.1. Sample Demographics

Thirteen participants work for SP and 10 for each of the remaining companies, with 53% being women and 47% being men. This gender distribution occurred at a 60/40 per cent ratio between women and men in BM, PS, and TW, and at a 38/62 per cent ratio in SP, in contrast. In terms of age group, 67% of all interviewed were under 40, but this ranged from 50% in TW to 90% in BM, as shown in Chart 1.

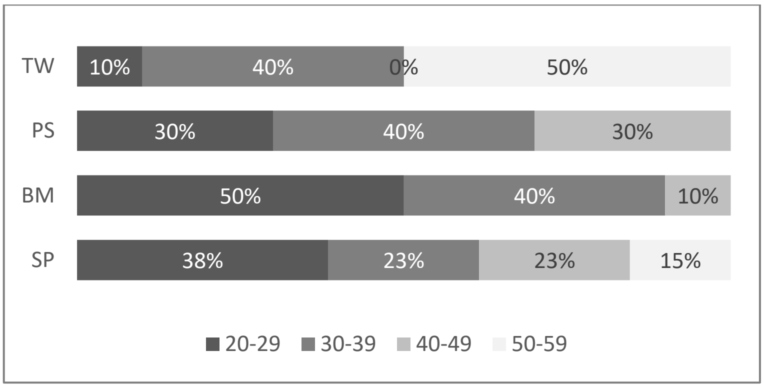

Chart 1. *Distribution of participants by age classes.*

The interviewed employees worked in several departments with different roles. The ones including the higher number of participants were human resources (6), management control (5), administrative (4), and accounting, production, and quality with three persons each (Table 3).

Table 3. *Distribution of participants by department/role.*

Department / Role	SP	BM	PS	TW
Human Resources	1	2	2	1
Management control	1	1	3	0
Administrative	1	0	0	3
Accounting	2	1	0	0
Production assistant	0	2	1	0
Quality management	3	0	0	0
Health and safety	0	2	0	0
Logistics	0	1	0	1
Procurement	1	0	1	0
Information systems	0	0	0	2
Lean management	0	1	0	0

Department / Role	SP	BM	PS	TW
Budgeting	0	0	1	0
Warehouse management	0	0	1	0
Construction manager	0	0	1	0
Credit control	1	0	0	0
Project management	1	0	0	0
Product management	1	0	0	0
Data analyst	1	0	0	0
Laboratory technician	0	0	0	1
Finance	0	0	0	1
Production planning	0	0	0	1

In terms of education levels, 79% of all participants had a bachelor's degree or higher. However, the differences between companies ranged from 80% or more of participants with these education levels in SP, BM, and PS and only 50% in TW, as can be verified in Chart 2.

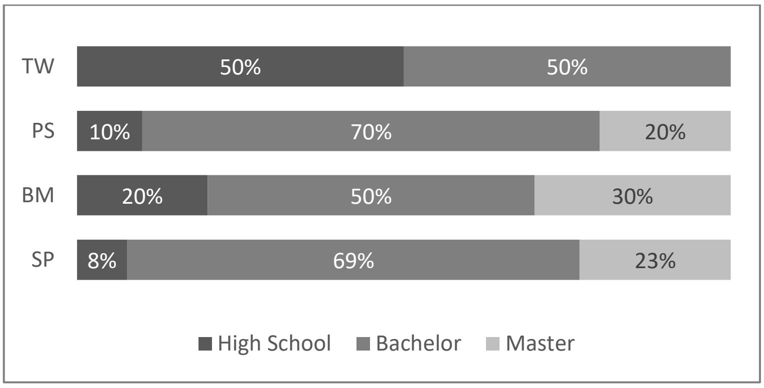

Chart 2. *Distribution of participants by education levels.*

Around 44% of all interviewees were in their first 10 years of working experience. However, this varies significantly between companies, where this figure reaches 60% and 70% in PS and BM respectively, and is only 10% in TW. In fact, seniority is much higher in this company's sample, where 50% of the participants have 21 years old of work or more.

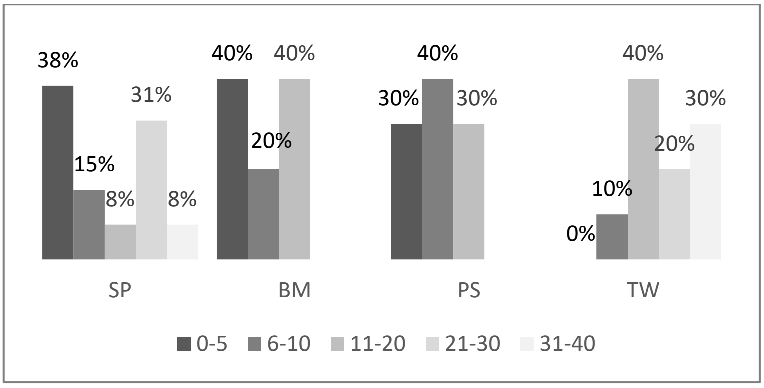

Chart 3. *Distribution of participants by number of years of total working experience.*

4.4. Interviewing Process

The interviews were scheduled by the human resources managers according to the participants' and the researcher's availability. The first set of interviews took place on the 16th of February 2022. The last interview occurred on the 17th of May 2022. The interviews were conducted in private offices in each company, with the exception of two participants that were interviewed through a videoconference platform (Microsoft Teams) due to their COVID-19 isolation terms at the time.

All participants were interviewed separately. First, the research topic, the definition of SOST and its advanced features, and the confidential nature of the session were explained to the participant. In each interview session, the researcher presented an informed consent declaration (Appendix 3) stating the purpose of the interview and the voluntariness of the act, in order to obtain the participants' authorization for the audio recording and data gathering. All the questions in the script (Appendix 2) were clearly read (and explained when necessary) and participants were given the opportunity to freely express themselves about the topics. The script included prompt questions to further develop the participants' answers in case their previous responses were not sufficiently profound or relevant.

In total, 12 hours of interviewing have been recorded. The maximum duration of an interview was of 26 minutes and 57 seconds. The shortest interview lasted 10 minutes and 54 seconds. The average length of all the interviews was 16 minutes and 44 seconds. All the interviews were fully transcribed.

4.5. Data Analysis Procedures

A content analysis was performed within the transcribed audio recorded in the interviews to determine the presence of some relevant themes or concepts, previously identified in the literature review. This method was chosen to obtain systematic inferences from the qualitative data gathered in the process of interviewing, while maintaining a more deductive reasoning by drawing conclusions from generally accepted statements presented by the participants.

In order to execute a content analysis, all text files with the interview's contents were imported into NVivo 12 Pro. Each interview/file was classified as belonging to a company and to a specific participant. For confidential purposes, their names (companies and participants') were coded. Afterwards, the process of coding the interviews began with the analysis of each participants' responses and the subsequent identification of categories and subcategories associated with the themes that were previously identified in the literature review stage.

In the process of coding the semi-structured interviews data, five major themes were identified (Table 4). These are: (i) SOST use, (ii) use barriers to SOST's advanced features, (iii) use benefits of SOST's advanced features, (iv) incentives to use SOST's advanced features, and (v) individual characteristics that influence SOST's advanced features use. For each of these themes, several categories and subcategories were introduced. In total, 13 categories and 48 subcategories were identified after analyzing all the interview transcriptions. Table 3 shows the occurrences for all of the companies and correspondent subcategories, as well as for each one separately.

Table 4. *SOST advanced feature's themes and categories.*

Themes	Categories	Subcategories	Occurrences				
			Overall	SP	BM	PS	TW
1. Adoption and use	**1.1 SOST's use**	1.1.1 MS Excel	42	13	9	10	10
		1.1.2 MS Outlook	21	4	4	6	7
		1.1.3 MS Word	20	4	4	7	5
		1.1.4 MS PowerPoint	13	2	2	5	4
	1.2 SOST applicability	1.2.1 Data analysis	17	8	2	4	3
		1.2.2 Communication	13	3	3	3	4
		1.2.3 Management control	12	4	2	4	2
		1.2.4 Reporting	12	3	3	4	2
		1.2.5 ERP data extraction	8	1	4	2	1
		1.2.6 Repetitive tasks	4	0	1	1	2
		1.2.7 Documentation	2	0	0	1	1
		1.2.8 Project management	2	1	1	0	0
		1.2.9 Search and filter	2	1	1	0	0
		1.2.10 Budgeting	1	0	0	0	0

Themes	Categories	Subcategories	Occurrences				
			Overall	SP	BM	PS	TW
	1.3 SOST's advanced features use	1.3.1 Pivot Tables and Charts	33	13	5	9	6
		1.3.2 Formulas and Functions	31	11	5	8	7
		1.3.3 Power BI	8	1	2	3	2
		1.3.4 Power Query	7	1	4	1	1
		1.3.5 Macros	5	0	1	1	3
		1.3.6 VBA	4	0	1	1	2
2. Use barriers to SOST's advanced features	2.1 Skills and self-efficacy barriers to use SOST's advanced features	2.1.1 Lack of skills	23	7	8	4	4
		2.1.2 Lack of time	19	4	7	4	4
		2.1.3 Lack of training	18	4	5	5	4
		2.1.4 Training limitations	9	3	2	2	2
		2.1.5 Different levels	6	4	0	1	1
		2.1.6 Individual inaptitude	5	1	3	0	1
	2.2 Limited consciousness of SOST's advanced features potential	2.2.1 Awareness of the potential usefulness	40	12	9	10	9
		2.2.2 Room for improvement	33	8	7	9	9
		2.2.3 Absence of necessity	27	10	6	4	7
		2.2.4 ERP expectations	4	2	1	1	0
	2.3 Software complexity implications of SOST's advanced features use	2.3.1 AF complexity	10	2	3	2	3
		2.3.2 Fear of errors	6	4	0	0	2
		2.3.3 Dependence from others	5	1	1	1	2
		2.3.4 High volume of data	2	1	1	0	0
3. Use benefits of SOST's advanced features	3.1 Task-centered benefits of SOST's advanced features use	3.1.1 Time saving	40	12	10	9	9
		3.1.2 Organization	21	7	6	2	6
		3.1.3 Avoid errors	13	4	2	3	4
		3.1.4 Explore other tasks	2	1	0	0	1
	3.2 Team-oriented benefits of SOST's advanced features use	3.2.1 Sharing	4	1	2	1	0
4. Incentives to use SOST's advanced features	4.1 Individual level incentives to use SOST's advanced features	4.1.1 Colleagues' incentives	30	8	8	9	5
		4.1.2 Autonomy	3	0	1	1	1
		4.1.3 Free time for self-development	1	0	0	1	0
	4.2 Software level incentives to use SOST's advanced features	4.2.1 ERP limitations	6	3	0	3	0
	4.3 Organizational level incentives to use SOST's advanced features	4.3.1 Training	35	12	10	4	9
		4.3.2 Top management	33	12	8	8	5
		4.3.3 Formal policies	32	5	8	10	9
		4.3.4 Organizational culture	26	11	3	7	5
	4.4 Support incentives to use SOST's advanced features	4.4.1 Co-workers support	34	12	9	7	6
		4.4.2 Online help	22	7	5	6	4
		4.4.3 IT support	9	1	2	1	5

Themes	Categories	Subcategories	Occurrences				
			Overall	SP	BM	PS	TW
5. Individual characteristics that influence SOST's advanced features use	**5.1 Individual traits that positively influence the use of SOST's advanced features**	5.1.1 Appetite for innovation	21	8	4	8	1
		5.1.2 Self-regulated learning	14	7	2	3	2
		5.1.3 Pragmatism	5	2	2	0	1
		5.1.4 Organizational skills	3	1	0	1	1
		5.1.5 Analytical skills	2	1	0	1	0
		5.1.6 Persistence	2	0	1	1	0
		5.1.7 Competitiveness	1	0	1	0	0
	5.2 Individual traits that negatively influence the use of SOST's advanced features	5.2.1 Unwillingness	4	1	0	1	2

In order to understand what all of these subcategories mean, they were listed and described in Table 5. The terms "advanced features" have been abbreviated to "AF" due to space limitations. All concepts shall be interpreted in terms of the users' perceptions.

Table 5. *Subcategories description.*

Subcategories	Description
1.1.1 MS Excel	Microsoft's spreadsheet software
1.1.2 MS Outlook	Microsoft's electronic mail and agenda manager software
1.1.3 MS Word	Microsoft's word processor software
1.1.4 MS PowerPoint	Microsoft's presentation software
1.2.1 Data analysis	Data analysis process
1.2.2 Communication	E-mailing, chatting, and video-conferencing
1.2.3 Management control	Management control process
1.2.4 Reporting	Reporting process
1.2.5 ERP data extraction	Extraction of data from ERPs for use in other applications
1.2.6 Repetitive tasks	Tasks with several repetitive steps, suitable for automation
1.2.7 Documentation	Documents used in business
1.2.8 Project management	Project management process
1.2.9 Search and filter	Search for information in a dataset
1.2.10 Budgeting	Budgeting process
1.3.1 Pivot Tables and Charts	Excel's interactive way to summarize large amounts of data
1.3.2 Formulas and Functions	Excel's equations to perform calculations
1.3.3 Power BI	Microsoft's business intelligence platform
1.3.4 Power Query	Microsoft's connector to external data
1.3.5 Macros	Microsoft Office's automated input sequence features
1.3.6 VBA	Microsoft Office's programing language
2.1.1 Lack of skills	Current AF skills are not enough

Subcategories	Description
2.1.2 Lack of time	There is no spare time to learn and practice AF
2.1.3 Lack of training	Training is not sufficient to obtain necessary AF skills
2.1.4 Training limitations	Several training limitations that affect the learning process
2.1.5 Different levels	Different levels of knowledge affect training efficacy
2.1.6 Individual inaptitude	There are individuals that are not able to learn new AF skills
2.2.1 Awareness of potential usefulness	Users are not aware of most advanced features potential
2.2.2 Room for improvement	Acknowledgement that AF can improve efficiency
2.2.3 Absence of necessity	Advanced features are not needed to improve efficiency
2.2.4 ERP expectations	Users expect ERP systems will solve their problems
2.3.1 Advanced features complexity	Acknowledgement that AF are difficult to learn and use
2.3.2 Fear of errors	Fear of making mistakes due to AF complexity
2.3.3 Dependence from others	Others influence in AF use, applied in shared SOST files
2.3.4 High volume of data	Belief that SOST cannot perform well with high volume of data
3.1.1 Time saving	Increase of efficiency with the use of AF
3.1.2 Organization	Favorable organization capabilities of SOST
3.1.3 Avoid errors	Reduction of errors with the use of AF
3.1.4 Explore other tasks	Spare time to explore other tasks after saving time with AF use
3.2.1 Sharing	Sharing capabilities of SOST
4.1.1 Colleagues' incentives	Colleagues' encouragement to use AF
4.1.2 Autonomy	Individual autonomy to use software of their own choice
4.1.3 Free time for self-development	Spare time to learn and test the use of new advanced features.
4.2.1 ERP limitations	Acknowledgement of ERP limitations and SOST benefits
4.3.1 Training	Impact of training in the use of AF
4.3.2 Top management	Top management incentives to use AF
4.3.3 Formal policies	Existence of formal policies that incentive the use of AF
4.3.4 Organizational culture	Impact of organizational culture in the use of AF
4.4.1 Co-workers support	Co-workers' mutual assistance in the use of AF
4.4.2 Online help	Online research to learn and use AF
4.4.3 IT support	Existence of an internal IT support for using AF
5.1.1 Appetite for innovation	Special interest in the innovative dimension of the AF
5.1.2 Self-regulated learning	Self-regulated learning in opposition to traditional training
5.1.3 Pragmatism	The use of AF as a practical approach to solve problems
5.1.4 Organizational skills	Personal care for methodical and organized tasks with AF
5.1.5 Analytical skills	Special attention to details provided by the use of AF
5.1.6 Persistence	Need to persist in the difficult process of learning AF
5.1.7 Competitiveness	High degree of competitiveness among colleagues
5.2.1 Unwillingness	Giving-up using AF

After the coding process was concluded in the NVivo 12 Pro software, this tool was used to explore data for relationships and richer insights. For that purpose, crosstabs were applied to study the links between multiple subcategories, companies, and participants. Word frequency was also studied to reveal the importance of some subcategories. The analyses obtained from NVivo represented the number of nodes (categories or subcategories) per cases (participants), which did not count multiple nodes per participant.

4.6. Qualitative Data Analysis Results

In this section, data produced by the interviews conducted with participants from the four companies are presented and analyzed following the same order of the categories and subcategories in Table 3.

a) <u>Adoption and use</u>

- **SOST's use and applicability**

Regarding the use of SOST, almost all participants used MS Excel in their daily routines. MS Word and MS Outlook was used by almost half of all interviewees. MS PowerPoint was mentioned by a few participants. Generally, people referred to MS Excel as the most SOST used in their work. This data confirms the expected widespread use of SOST.

In order to understand the relevance of the SOST used in the context of individuals' job functions, employees were asked to describe these tools' applicability in their daily tasks. Their responses showed these SOST are used for several purposes. MS Excel sheets are used to manage credit control, project management, analyze high volumes of data, automatically obtain monthly and annual reports, input data and obtain results, control expenditure, analyze product data, manage suppliers' prices, compare quotations, and prepare data for presentation, among other uses. MS Word was mentioned as the tool used to do meeting minutes and general documentation. Many employees use MS Outlook as the electronic mail software for internal and external communication. MS PowerPoint is used for data presentation. Most of these SOST applicability were considered relevant by the interviewees in the scope of these employee's functions, since it reflects uses related to their core activities in most cases. In terms of SOST applicability, data analysis, communication and meetings, reporting, and management control, are the most performed tasks. It is interesting that only four interviewees mentioned using these tools for repetitive tasks, because this should be one of the main purposes of these tools, which is related to efficiency improvement (Alexander & Kusleika, 2019; Walkenbach, 2010).

- **SOST's advanced features use**

All participants but three indicated they use advanced features. The majority of them uses Formulas and Functions, and Pivot Tables and Pivot Charts (Chart 6). However, the most advanced features, i.e., Macros and VBA programming, which are those with the highest potential for automation and efficiency improvement (Alexander & Kusleika, 2019; LeBlanc & Galbreth, 2007; Walkenbach, 2010), are used only by a residual number of participants. A minority of participants is using Power Query to import data automatically from external sources and eight persons use Power BI to automate the reporting process. This data suggests an underutilization of SOST's advanced features that may represent an inefficient use of these tools and that may affect productivity, as stated by Cockburn et al. (2014).

b) <u>Use barriers to SOST's advanced features</u>

- **Skills and self-efficacy barriers to use SOST's advanced features**

As pointed out by the interviewees, there are several skills and self-efficacy barriers to use SOST's advanced features, ranging from the participant's lack of skills to their individual inaptitude to learn and use these tools.

The majority of participants highlighted their own lack of skills as a main barrier to the use of SOST's advanced features:

> "I know that there are things that facilitate [efficiency], but sometimes we have no skills to do it." (DDulce – SP)
>
> "I do not use VBA because I do not know how to use it" (MDaniela – PS)
>
> "The principal reason not to use advanced features is because we do not know how to use them. That is why we go the long way, using Excel's basic features, even though it takes more time." (LSofia – BM)

These results are aligned with Gupta and Bostrom (2019), who suggested that specific software and complex tasks self-efficacy (SC-SE), where SOST's advanced features fit, are not usually covered in training, which is misleading for advanced training sessions. Therefore, even though many users had advanced training, those schemes were not enough to give them the skills needed to perform in their jobs.

This lack of skills can be related to the other barriers identified, namely lack of training in the area and lack of personal time to practice and learn, as pointed out by the participants:

> "Even with the help from others I still need more training in the field." (CSara – BM)
>
> "I have never had training in any of these MS Office tools." (RArminda – SP)

> "For example, today I have an analysis to perform. Every month I have something like this, which is routine. It is something that I need to automate. However, I did not get enough spare time to study the problem and get a solution." (MSonia – SP)

Kane and Labianca (2011) stated that claims of lack of training may be legitimate reasons for choosing not to use an information system, such as SOST's advanced features. However, they also introduced the term IS avoidance, which refers to individuals' resistance to use a system despite the opportunity to do so. In the companies of our study, this second situation was not detected since almost every participant indicated using advanced features.

When benefiting from training, different levels of skills among the participants have been pointed out as demotivating for those with higher skills and hard to follow for those with lower skills:

> "[For training] we need a group of 20 people where individual needs are diverse, since they are from several departments and they use these tools in different ways. Even inside a department, we have different [training] objectives. Therefore, it is not easy to design a training scheme that suits everybody." (PAna – SP)

This group heterogeneity has been identified as problematic in what concerns finding common ground to suit trainees' needs (Czinki, 2011). When this happens, it is suggested that opting for learning methods that focus on the individual achieves better results (Canfora, 2015).

Only a small number of participants admitted individual inaptitude to learn and use some advanced features. However, this result should be interpreted with some caution since individuals might be reluctant to assume this situation. This idea is supported by Thatcher et al. (2008) when they refer that revealing an inability to complete a computer task magnifies computer anxiety. As many of the advanced features analyzed in our study are complex to learn, it is possible that more individuals face difficulties.

- **Limited consciousness of SOST's advanced features potential**

Other barriers to using SOST's advanced features were categorized as limited consciousness of SOST's advanced features potential.

The majority of the participants started by claiming that they do not use more sophisticated advanced features because they do not need them:

> "Maybe I did not feel the need yet [to use other advanced features]." (BCarina – SP)
>
> "Basically, I do not have the need [to use other advanced features]." (NPaulo – TW)
>
> "If it was a need, I would have investigated other advanced features and used them." (VGabriel – SP)

On the other hand, when asked if they knew what they could do with other SOST's advanced features, almost all participants recognized they did not have sufficient knowledge of their potential to improve tasks efficiency:

> "I do not know that feature [advanced]. Maybe it would improve efficiency. But I do not know it." (BPatricia – TW)

> "Sometimes, since we are focused on our daily tasks, we do not even have time to notice that other advanced features might exist to support that same task. Maybe with just a click, the task could be completed." (MJorge – PS)

> "I do not know the potential of all advanced features. I think I am not even able to dream about all the things that can be done with Excel." (MAndreia – BM)

Despite significant attempts carried out by the researcher to search for the unawareness of feature-rich software advanced features potential concept, this was not identified in the literature review. This unawareness means that users are not even able to recognize a discrepancy (Armenakis et al., 1999), which refers to the belief that a change is needed or that there is a significant gap between a current and a desired state in an organization. Therefore, the need for a change cannot be identified. If this is the case in our study, it means that advanced features are often not considered as useful to improve efficiency in a particular task because the users are not aware of these features' potential. If people do not know these advanced features capabilities, they are not able to assess if there is something to be improved (a discrepancy).

On the other hand, although many users recognized their unawareness of the advanced features potential, most of them mentioned there is room for improvement in terms of executing their tasks more efficiently:

> "...because I am sure that most people – including me – would be able to automate even further their tasks with these advanced features." (BCarina – SP)

> "With support, I would be more comfortable to further evolve with the features [advanced] available." (CCatarina – PS)

> "It would be much faster, much easier [with the use of advanced features]. Therefore, I would improve." (FMaria – BM)

These results mean that, even though many participants believe they master enough SOST's features to perform their jobs efficiently, they also acknowledge that there are advanced features that they do not know but could be used in their tasks. Considering this, they concede that these advanced features might improve their tasks' efficiency.

Additionally, participants indicated their future use of an ERP system. Therefore, it is conceivable that expectations created about this system originate some detachment from SOST, especially when there is an indication that the new system will substitute the tasks currently performed with SOST:

> "At this stage, the development of an automation process for those files [SOST] stopped, because we are going to have a new tool [ERP] and there is no point to spare time now for automating everything." (VGabriel – SP)

> "Because we have more and more software [ERP] for several management areas that may influence people not to use the Office package [SOST]." (RArminda – SP)

However, this perception might be misleading since there will be tasks that are not covered by ERP systems:

> "In the human resources department, it is important to have the software [ERP] because it is an improvement in some areas, but not in the area of training, for example, because it takes more time [than with SOST] creating training records. Thus, if on the one hand it [ERP] is beneficial, on the other hand it is a loss." (RArminda – SP)

Therefore, the results suggest that a limited consciousness of SOST's advanced features potential may be influential in the quest for ERP systems that are supposed to improve tasks efficiency. If users are not aware of SOST's advanced features' potential to increase their tasks' efficiency, it is expectable that they seek these solutions in ERP systems, which is not guaranteed. Despite the existence of this expectation, Schwab (2021) argues that MS Excel, for example, is still used by the majority of businesses despite the software vendors promises, in the 2000s, that their ERPs would replace MS Excel. This resilience is due to many data processing operations that are still carried out successfully with MS Excel, with advantages over centralized systems [ERP].

- **Software complexity implications of SOST's advanced features use**

Some participants considered the complexity of SOST's advanced features and other related barriers to their adoption and use.

Almost one fourth of all participants recognize the complexity of advanced features, which is a reason not to use them:

> "What takes for us, theoretically, one or two days of development, they [the VBA specialists] can do in a couple of hours. That is why we do not use VBA." (PFrancisco – TW)

> "…one needs to know what he is doing when using the advanced features. You do not fly a plane if you are not a pilot!" (CCarlos – TW)

> "…because this functionality is complex and I am not comfortable using it." (VGabriel – SP)

This complexity perception is consistent with Bhavnani and John's (1996) perspective that, even when users are highly trained, they face difficulties using feature-rich software due to their extensive number of features, commands, and requirements.

Other concept that needs clarification is dependence from others. In this case, what is at stake is the shared use of some program files that already include a particular use of software features (advanced or not). When some users are dependent from management policies that do not allow changing (improving) the functionalities that are available in those files, their field of action is limited in what refers to the use of advanced features.

Some people perceive the use of advanced features as risky because they fear failing (Miltgen et al., 2013). In our study, a few individuals claimed there is fear of committing errors when using these features, although some of them were referring to other people's fears and not their own:

> "Yes, because a live formula is dangerous, isn't it? If the source file is not available, it will deliver an error and it computes wrong results, isn't it?" (PAna – SP)

> Since I am of an older generation, I am always afraid of committing errors and not being able to solve it." (PAriana – TW)

> "They do the basic calculations, but sometimes they are afraid of doing it." (AAlberto – SP)

Some claims of the participants reveal questionable conclusions and a lack of knowledge of how to use advanced features. For example, PAna said that "a live formula is dangerous" because it can produce wrong results if the source file is not available. However, there are ways to check if this is happening and to reestablish the connection with the source file easily (Microsoft Corporation, 2022b). Thus, the fear of errors can be understood as a consequence of the individuals' lack of skills and not of a problem of the tool used. This is consistent with the argument that users make more errors in their initial stages of learning (Carroll & Carrithers, 1984), especially in feature-rich applications (Mahmud et al., 2020), such as the SOST.

In fact, some advanced features are complex, particularly advanced formulas, i.e., Macros and VBA, where logical reasoning and advanced technical skills are needed so that the user is able to create their own solutions. However, it can be hard to develop these advanced capabilities, since programming is difficult to learn and demands a high abstraction level (Gomes & Mendes, 2007).

Some of the interviewed users warned that they were not supposed to change the files that were shared with them, meaning that they are totally dependent on other colleagues if they need to improve something in the file.

> "The structure of the file in which I work does not allow me to use more than simple formulas, because it has a layout that needs to remain unchanged and that does not let me run anything that is advanced." (PAmelia – TW)

Once again, this may happen because of the advanced features complexity and to avoid problems in the files due to unskilled use.

c) Use benefits of SOST's advanced features

- **Task-centered benefits of SOST's advanced features use**

In terms of the use benefits of SOST's advanced features, most of the participants identified benefits related to task execution efficiency and these can be divided into task-centered benefits and team-oriented benefits.

The following is an analysis of the task-centered benefits identified by interviewees.

Almost all of the participants recognized that time saving is a major benefit, which is directly related to efficiency and productivity:

> "There are about 300,000 lines of data that I extract to Excel and that are difficult to work with.... To minimize that work, I have created a VBA program that does it all, and my work is completed every month." (BJorge – PS)

> "That kind of work would take about a month to execute without those tools. The advantage is speed and reliability." (MJorge – SP)

> "If there were no advanced features, I would spend much more time to execute my tasks. The work I can do in a morning period would then take a day or a day and a half." (VNorberto – SP)

Time savings is a major benefit of SOST's use and this understanding can influence the perception of the usefulness of information systems (Shibl et al., 2013; Shu et al., 2001). Time savings can be increased with the use of SOST's advanced features. However, despite this advanced features' advantage, users may not use them if they are not aware of their benefits potential. This is the advanced features awareness of the potential usefulness concept that we have introduced before.

Many other participants highlight that the use of spreadsheets promotes gains in terms of data organization, as pointed out by Broman and Woo (2018):

> "...through that way [advanced feature], I can get all the information I need and summarize it easily in Excel." (MOlavo – SP)

> "I have a lot of widespread data. When I need to make a selection of some data to consolidate it, I use a Pivot Table that makes it easy to do." (VGabriel – SP)

Thirteen users said that using advanced features is a way to avoid errors. This is the opposite of what other participants claimed when they considered the use of these tools as risky (fear of errors). However, two (PAna and PAriana) of the four persons that considered to be afraid of committing errors with the use of advanced features, also recognized that these were important to avoid errors. This apparent paradox can be explained by a lack of confidence in using these tools due to limited skills, as recognized by one participant (PAriana). The literature points to a debate about whether spreadsheets' users are prone to error or not. Panko (1998), in a study of several spreadsheets, reported that an average of 88% contained errors due to misuse. However, Broman and Woo (2018) studied the issue and listed a set of good practices for using spreadsheets and avoiding those errors. Thus, when properly used, advanced features may decrease the occurrence of input errors and miscalculations:

> "These tools are solid and we can get analyses that are more reliable." (CCarlos – TW)

> "The benefit is speed and reliability. If this was manual, things could go wrong." (MJorge – SP)

> "Reliable information with no probability of error." (FSandra – PS)

A residual number of participants highlighted the opportunity to explore other tasks and obtain other gains when the users adopt advanced features that automate tasks and allow them spare time to do other things:

> "We can save time related to the more routine tasks, with the use of the proper advanced features, and use the spare time to progress in other areas and to evolve in our work." (MSonia – SP)

> "...as well as to get spare time to do other important tasks." (TFrancisco – TW)

This spare time to explore other tasks concept has been acknowledged in relation to the use of spreadsheets, databases, and Macros (Spiech, 2008). It is possible that spare time is not recognized by more people as a benefit because users may see the way they execute these tasks as a standard behavior and as part of their daily routine. This way, they do not question their efficiency since they are used to perform those tasks the very same way as long as they can remember. Additionally, if they are not aware of SOST's advanced features potential, as we elaborated previously, they will not be in a position to acknowledge those spare time benefits because they will not have a clear indication of how much time they will potentially save in a particular task.

- **Team-oriented benefits of SOST's advanced features use**

Four participants recognized a relevant team-oriented benefit, i.e., the sharing features in MS Office applications, particularly in the MS Office 365 version, which uses the cloud to share files and improve employee collaboration (Microsoft Corporation, 2022a). This idea can be summarized with the following statement:

> "MS Word is not only a writing machine anymore, because we can all work on the same document at the same time. I was astonished the first time I saw many people overscoring the text simultaneously [editing a file in review mode]." (Bjorge – PS)

Sharing is an important feature of SOST, such as in the MS Office package, and collaboration software is a trend in the market (Grand View Research, 2022).

d) <u>Incentives to use SOST's advanced features</u>

According to participants' responses, the incentives to use SOST's advanced features can be divided into four categories: (i) individual level incentives, (ii) software incentives, (iii) organizational level incentives, and also (iv) support incentives to use SOST's advanced features.

- **Individual level incentives to use SOST's advanced features**

Individual level incentives (one person encourages another) to use SOST's advanced features comprehend colleagues' incentives, autonomy, and free time for self-development.

The majority of participants distinguished the relevance of colleagues' incentives:

> "My colleagues encourage me to improve my skills. Sometimes they notice I am doing some tasks and call me to suggest a better way to do them." (AAlberto – SP)

> "There is a lot of information exchange and we influence each other." (CCatarina – PS)

> "My colleagues encourage me to use advanced features." (MJorge – SP)

It should be noted that all participants who declared to use the advanced features (Macros and VBA) acknowledged the importance of colleagues' incentives. As more experienced users in terms of advanced functionalities, these participants may be more prone to recognize the role that other users have played in encouraging them to use these features.

It must be underlined that colleagues' incentives should not be confused with the subcategory co-workers' assistance. The first is about encouragement to use only, but the second is more than that since it involves explaining how an advanced feature can be used. According to Shirish et al. (2021), favorable colleagues' opinions have a positive impact on the perceived benefits of a new system use. That may be the case with these participants, since they get favorable suggestions from their colleagues to use advanced features.

Autonomy is related to the degree of voluntariness to use these tools and was referred by three participants. They mention autonomy in the context in which they are not forced to use advanced features, instead they are free (benefit from autonomy) to use whatever tool they want to execute the task:

> "Yes, they [advanced features] can help, but it is my decision to use or not to use..." (PAriana – TW)

> "They [managers] can recommend the use of an advanced feature, to improve efficiency, but we are free to decide what to use." (POsvaldo – BM)

Although autonomy can be viewed as a positive attribute by participants, it is possible that it contributes to preventing the use of advanced features, especially by those who face difficulties using them. However, it has been argued that employees who experience autonomy, have supportive colleagues and, simultaneously, receive proper support from them (Hakanen et al., 2006; Mauno et al., 2007; Schaufeli & Bakker, 2004; Xanthopoulou et al., 2009a).

Free time for self-development can be defined as the available time during work hours that one can employ to learn and test the use of new advanced features. In this period, users are not executing their daily regular tasks, instead they are developing their own skills to use advanced features that may increase future tasks' execution efficiency. This perception was pointed out by one person:

> "...I had spare time to explore other things.... I explored the advanced features, in order to have the foundations to be able to create a central information system in the company." (BJorge – PS)

- **Incentives to use SOST's advanced features originated from ERP limitations**

Another incentive to use SOST's advance features is related to the indirect influence of Enterprise Resource Planning (ERP) software limitations, as pointed out by a few employees. When employees lack ERP features to solve their problems efficiently, they use SOST to execute those tasks:

> "...in my case, that [ERP use] does not fall within the scope and I would rather use Excel, because it allows filtering or to search using some specific criteria, or even because we can organize the data in different ways." (BCarina – SP)

> "...in my case, Excel can be more beneficial than our accounting software. To start it is far less expensive. Additionally, it is more efficient. If well configured, Excel wins 20-0 against our accounting software." (EBruno – SP)

> "I have a repetitive task that I can compare between MS Office and our Human Resources software, that is, to file training records. It is faster with the use of MS Office than with the Human Resources software, because it allows crossing a lot of data easily, unlike the ERP in which we need to consult a lot of different windows..." (RArminda – SP)

In fact, no software system covers all processes and procedures of an organization. Other tools, such as the SOST, are frequently used to fill in the gaps. For example, Meissonier and Houzé (2010) found, in a case study, that the finance department was using a set of Excel Macros to complement tasks performed with SAGE accountancy software. Therefore, it is not surprising that the participants of our study mentioned the use of some SOST to perform tasks that are not possible to execute with ERP systems.

- **Organizational level incentives to use SOST's advanced features**

At the organizational level, other subcategories were emphasized by participants. Most of the participants highlighted the importance of training in the process of developing skills for the use of the advanced features:

> "Training in advanced Excel, for example, is always in high demand by employees. They request them and the company ensures that they can have access to this kind of training." (BCarina – SP)

> "In this company, we always have training. So, that is not the problem." (Acelia – TW)

> "The human resources department questions everyone, by the end of the year, which training courses they want to participate in. After that, the company offers these training sessions." (BJacinto – BM)

Employees' training is considered a critical factor for the successful implementation of information systems (Gallivan et al., 2005). In our study, the companies offer training schemes to their employees, even though there are limitations, such as the lack of enough spare time for training related by some participants and the heterogeneity of training groups that reduce their motivation and the learning process efficacy.

The majority of the interviewees also pointed to top management incentives to use the advanced features:

> "We need to provide a lot of information to top management. Therefore, we have total support from them to use these features [advanced], otherwise we wouldn't be able to reply properly to all of their requests." (CCatarina – PS)
>
> "I believe that the top management strongly wishes that we use these advanced features because they need analysis, they need data extraction, but they don't want people to waste time in these tasks…" (DDulce – SP)
>
> "They [top management] themselves encourage and help us using the advanced features." (GSandro – BM)

Management support was considered determinant for the implementation of successful information systems in organizations (Dong et al., 2009). Principal support refers to the belief that formal leaders are change agents and that they are committed to the success of a change (Armenakis et al., 1999; Armenakis & Harris, 2009). Considering this, the adoption and systematic use of SOST's advanced features is also related to top management incentives, as in the case of the enterprises in our study.

In what concerns organizational level incentives to use SOST's advanced features, participants concluded that, despite managers' incentives to use those tools, their organization lacks other formal policies that could play a major role in the process of adoption and use of advanced features:

> "Beyond training, I don't think there is any other policy to develop the learning process of these tools [advanced features]." (LSofia – BM)
>
> "I don't think there is a policy. When we participate in a meeting, if we don't present organized and precise data, we can be reprimanded if things are not right." (Pana – SP)
>
> "In my view, there is an incentive to use [advanced features]. However, this incentive is not clear [formal]." (NPaulo – TW)

This scarcity of formal policies may contribute to some reduced attention to the problem of advanced features underutilization. Since top management and managers may be focused on other areas of interest, it seems that SOST's advanced features are mostly left under employee's decisions whether to use them or not (they become dependent on their autonomy). This might explain, in part, employees' lack of skills to use advanced features, particularly Macros and VBA.

- **Assistance incentives to use SOST's advanced features**

Finally, in what concerns to the incentives to use SOST's advance features, one last category was identified, that is, technical assistance to the use of those tools. Almost all participants identified the importance of co-workers' assistance in their efforts to use SOST's advanced features:

> "For example, about the Outlook e-mail templates, I only found that feature because [...] I saw a colleague using it and realized it was interesting. Then she showed me how to use it and I learned." (BAdriana – PS)

> "I get support from colleagues that are better trained and have more experienced than me in those tools [advanced features]. It is easy to get that support." (CSara – BM)

> "Everything I know about Excel was self-learned or learned with the help of colleagues." (RArminda – PS)

The co-workers' assistance has been associated with a negative influence on self-efficacy and outcome expectations (Compeau & Higgins, 1995). At first glance, this seems contradictory; however, the authors explain that people who rely on help from colleagues are not proactive enough to solve problems on their own, which means they do not develop the self-efficacy needed to master the tools. Colleagues that make large contributions to firm productivity and task execution efficiency, designated as "star workers" (Groysberg et al., 2011) may disseminate knowledge over the organization (Kehoe et al., 2015), but this might not be enough to raise the low levels of skills when it comes to use the most advanced features.

About half of the interviewees considered the online search for help a great source of information on how to use advanced features:

> "I think the internet helps. Sometimes, when I need a solution, an online search can be very quick to obtain useful information. Those tools are very helpful." (MJorge – SP)

> "I have no training in Excel, but I use online information to help me solve the problems [task related] I face." (BJorge – SP)

> "If I don't know the formula, I will search the internet to know how to use it." (BPatricia – TW)

In a study of how people use help resources, the vast majority of participants started their queries by searching on Google, but they evidenced an inability to recognize relevant help in this and other sources (Kiani et al., 2019). Participants in that study also preferred the visualization of video tutorials over other sources, despite many of them did not find this useful because they were afraid of spending too much time watching long videos that might not be relevant. This may be one of the reasons why many participants of that study claim that they search online for help but still do not evolve to use the most advanced features, such as Macros and VBA.

Finally, technical assistance from an internal IT department to help dealing with SOST's advanced features issues was referred by some participants:

> "Since I work in the same room as my IT colleagues, sometimes I can ask them for help." (BCarina – SP)

> "We also have the IT team. In case of difficulties, we can call them for support." (BPatricia – TW)

Even though some users claim in our study that their IT assistance is very efficient, Arasanmi et al. (2012) concluded in their research about their ineffectiveness, since they were considered technically competent but unable to solve specific task problems. This means that IT individuals may know how to use a particular advanced feature in a general context, but no being able to apply it to a concrete task.

Co-worker assistance, IT assistance, and online help may be dependent from user's proactivity as well. A task that is performed frequently may not be executed in the most efficient way. As presented before, most users in the companies of our study are not aware of the potential of many advanced features. They may even be executing a task manually without knowing that there was an automated solution that could execute it with less effort, much faster, and less risky in terms of errors. Being this the case, without some user proactivity to ask colleagues or the IT department for support, or some online search for the problem, the identification of SOST's features that would help improve that task's efficiency is not possible. This suggests the importance of the concept of awareness of the potential usefulness, which has been identified in this study and reveals a problem that goes beyond the lack of skills limitations.

e) Individual characteristics that influence SOST's advanced features use

In terms of individual characteristics that influence SOST's advanced features use, the interviews' analysis revealed they and other colleagues possess individual traits that positively and negatively influence this use. The identified positive traits were appetite for innovation, self-regulated learning, pragmatism, organizational skills, persistence, and competitiveness. Unwillingness was mentioned as a negative individual trait for some individuals. Next, there is an analysis of the subcategories identified.

- **Individual traits that positively influence the use of SOST's advanced features**

Starting with the positive individual traits, several subcategories have been structured following the participants' opinions about the subject.

The one at the top of people's perceptions is the appetite for innovation, that is a special interest in the innovative dimension of the SOST's advanced features:

> "It is a fact that I am curious and always try to find new [advanced] features in the tool. I always try to take the most out of the tool." (BAdriana – PS)

> "Because I like to take the most of the tools I have at my disposal. It is good if I can improve. I was always someone who enjoyed innovation." (MJorge – SP)

> "...I believe that if we have an open mind and accept that information technology is there to help us, that is a long way towards achieving the results." (LLidia – PS).

This concept of appetite for innovation, designated as such by the participants, is the same as the one described by Agarwal and Prasad (1998, p. 206) as personal innovativeness in the domain of information technology (PIIT), which means "the willingness of an individual to try out any new information technology". In our study, almost half of the participants attributed this personal trait to themselves. Nevertheless, possessing this important trait does not seem enough to influence these individuals to use the most advanced features of SOST (only a small number of employees use Macros and VBA).

Self-regulated learning capability is also an important individual trait that a significant number of participants declared to possess. It implies a certain degree of autonomy, which means it distinguishes from more traditional learning processes. Self-regulated learning represents individual autonomy and desire to learn some subject (Zimmerman, 1989). Normally, it is not an imposed process. Instead, it is dependent on individuals' proactivity (Pintrich, 2000) and may not be the consequence of management policies such as those that conduct to corporate training. Self-regulated learning distinguishes from what can be learned or obtained with IT assistance and co-workers assistance. Sometimes, the existence of IT assistance and co-workers' assistance can even reduce self-regulated learning activities. For example, if individuals can always obtain external help when they encounter difficulties, they may never be forced to sort things out for themselves (Compeau & Higgins, 1995). Naturally, self-regulated learning can use available resources to learn, such as online help obtained from internet tutorials, support forums, and other online publications (Kiani et al., 2019). These are some of participants' views about self-regulated learning:

> "I can say that I had training, but most of what I learned was through empirical investigation. I searched, read and then I found the solutions." (AAlberto – SP)

> "I think they [company] don't provide learning for the advanced features specifically. The ones I know I self-learned them. I didn't learn them with the training I had in here." (PAmelia – TW)

> "...I am a proactive and self-learning person. I am always trying to improve my knowledge. When I have spare time, I try a new step forward [to learn]." (PFrancisco – TW)

Given the disparity between the number of participants who identified themselves with the skill appetite for innovation but not the skill self-regulated learning process, it can be hypothesized that a user may have the first skill but not the second one. It implies they can learn through other means, such as conventional training with a tutor, instead of trying to self-learn a subject through tutorials.

Furthermore, the self-regulated learning process has its challenges: (i) users make more errors in such a process and this can demotivate them (Carroll & Carrithers, 1984); (ii) poor learners follow inadequate strategies and repeat ineffective steps (Trudel & Payne, 1995); and (iii) users' risks being lost in a superabundance of information (Kiliç-Çakmak, 2010), which may be the case of feature-rich software. Thus, although a self-regulated learning process might be relevant to improve SOST's advanced features self-efficacy, such a strategy can also cause disruptions to the learning process, especially when the advanced features are complex and difficult to learn.

Being pragmatic, possessing analytical skills, possessing organizational skills, and being competitive were also referred by some employees as traits that they own and may positively influence their use of SOST's advanced features:

> "I am a pragmatic person, always ready to learn new things, and always available for anything that would improve efficiency." (NPaulo – TW)

> "…I am analytical…I like to work with data and to obtain insights from it." (MSonia – SP)

> "I like to organize and to have everything in its right place. It reflects the real me." (PAmelia – TW)

> "…a bit of competitiveness, or willing not to fall behind others." (SArmando – BM)

- **Individual traits that negatively influence the use of SOST's advanced features**

A few participants recognized their unwillingness to use advanced features as a trait that may influence their use of SOST's advanced features negatively:

> "When I was younger, I had more interest, but sometimes I lack the will of searching and do that work for myself." (CIvo – SP)

This concept is close to inertia (Markus, 1983), as a cognitive misperception related to loss aversion when the user perceives greater costs than benefits. In this situation, the participant does not even make an effort to check which advanced features could be used to increase their own tasks efficiency. This user (CIvo) was the oldest participant in this company. It is possible that unwillingness increases with age, since that the cognitive ability to learn decreases with age (Hämäläinen et al., 2015).

f) Summary

The interviews revealed that the participants frequently use SOST, especially MS Excel. However, although many employees use some advanced features of those tools, they generally do not benefit from the most advanced ones, i.e., Macros and VBA. These advanced features are the ones to be used for automation purposes when other standard features are not enough to complete tasks efficiently (Alexander & Kusleika, 2019) and offer more significant efficiency gains. Many interviewees feel they lack the skills for an effective use of advanced features, and this seems related to lack of training, on the one hand, and lack of time to learn new features, on the other hand, as they recognized. The participants also questioned the efficacy of the SOST training, particularly arguing that having people with different knowledge levels in the same training sessions is a major problem due to the need to evolve at different learning rhythms.

A major result that has emerged from these interviews is that, although almost all participants claim that they do not feel the need of many advanced features, there is a recognition, from most of them, that they do not know the potential of those advanced features. In fact, those advanced features may well be quite useful to support their own tasks, but they are not aware of that. This unawareness may explain why most people only use the basic functionalities of feature-rich software, as claimed by Bhavnani et al. (2000); Bhavnani and John (1996); Doane et al. (1990); Nilsen et al. (1993).

As principal benefits from the use of SOST's advanced features, many participants considered they allow for time saving in the execution of tasks, improve the process of organizing data, and avoid processing errors. However, some participants also pointed to barriers preventing their use, namely fear of committing errors (possibly due to its complexity, as some also pointed out) and lack of knowledge of the best practices to guarantee the reliability of the data processed. This is consistent with the difficulties to learn and use feature-rich software indicated by Lafreniere et al. (2014).

Most participants agree that the top management team encourages the use of SOST's advanced features. This concept of principal support (leadership support) is relevant to set the organization's readiness for an organizational change (Armenakis & Harris, 2002). Nevertheless, many interviewees also said that top management influence is not explicit but tacit because there are no formal instructions or policies about that use. Therefore, despite the top management's favourable position to the use of SOST's advanced features, training seems to be the only formal policy guiding employees from the four companies on how to improve their advanced features usage.

In our study, the role of colleagues was considered relevant in the process of using SOST's advanced features, both by encouraging others to use those features (Shirish & Batuekueno, 2021) and by offering the first line of assistance when someone faces difficulties using some advanced feature, especially when there is employee autonomy to opt for alternative solutions (Hakanen et al., 2006; Mauno et al., 2007; Schaufeli & Bakker, 2004; Xanthopoulou et al., 2009a). However, this support may also be the reason for some users not developing their own skills with advanced features, that is, they get used to obtain support from others to solve their problems (Compeau & Higgins, 1995).

Another surprising aspect found in our study is that, despite the existence of IT departments, only some participants referred to them as offering technical support regarding SOST. This seems to imply that these individuals do not significantly value the IT department's role in supporting and broadening the use of these feature-rich software advanced features.

Additionally, when training and support from others are insufficient, the individuals seem to rely on their self-regulated learning skills to use online information and tutorials to improve the use of SOST's advanced features. However, this learning strategy has not been enough to promote the use of the most advanced features, probably because these individuals are not sufficiently aware of their potential and consequent efficiency gains.

It is worth noting that users of the more advanced features (Macros and VBA) indicated characteristics that may be crucial for this type of advanced use. Firstly, all of these advanced users recognize that, despite their advanced level, there is room for improvement, indicating the potential for enhancing efficiency. They all acknowledge that the advanced features allow them to save time and most of them considered that they help avoid errors. In fact, unlike other participants, none of these users mentioned a fear of errors. All of these advanced users mentioned the importance of colleague incentives. The majority of these users utilize online help as a means of obtaining assistance for executing tasks with the advanced features, have an appetite for innovation, and consider themselves as self-learners. These traits may align with the profile of a performance star (Kehoe & Bentley, 2018), who, in the context of SOST, is a user that prioritizes the use of advanced features throughout their professional journey, thus maximizing the potential for enhancing the efficiency of executing administrative tasks.

5. Extending the UTAUT Model with New Variables – a Quantitative Approach

This chapter presents the second study, which employs a quantitative approach to determine the causes of the underutilization of the advanced features of feature-rich applications and its impact on the (in)efficient execution of administrative tasks in companies. For that purpose, the theoretical UTAUT model (Venkatesh et al., 2003, 2012) of technology acceptance and adoption was considered.

5.1. Quantitative Study objectives

The aim of this research is to determine the causes of underutilization of the advanced features of feature-rich computer applications, which may have implications for the efficiency of executing administrative tasks. The literature review and the qualitative study allowed us to identify the potential causes of the inefficient use of these tools. The UTAUT model, for technology adoption and use, served as the theoretical basis for the construction of a more developed model that could contribute to a deeper understanding of the use of feature-rich applications, which are widely available in organizations, such as the SOST. Thus, after identifying the relevant constructs in the qualitative study and the literature review, for extending the UTAUT model, the following objectives were defined for this quantitative study:

1. To determine the impact of recognizing an improvement opportunity on the intention to use SOST's advanced features.
2. To determine the impact of innovative personality traits on the intention to use SOST's advanced features.
3. To determine the impact of self-regulated learning skills on the intention to use SOST's advanced features.
4. To determine the impact of complex task self-efficacy personal levels on the intention to use SOST's advanced features.
5. To determine the impact of top management support on the intention to use SOST's advanced features.
6. To determine the impact of the acknowledgment of the potential of advanced features on the intention to use SOST's advanced features.

Objective 1 incorporates the discrepancy construct (Armenakis et al., 1999), which represents the recognition that a current situation requires change and, therefore, can be the subject of improvement and may have an impact in the intention to use SOST's advanced features.

Objective 2 refers to the individual's disposition and capacity to embrace and implement novel ideas, technologies, or innovations, according to the concept of personal innovativeness (Agarwal & Prasad, 1998) and its effects on the intention to use SOST's advanced features.

Self-regulated learning (Zimmerman, 1989) is about the active and intentional process by which individuals take control of their own learning, which is included in Objective 3. The aim is to determine the learner's responsibility in directing and regulating their own learning journey, ultimately leading to more effective and independent learning of SOST's advanced features, and the impact on the usage of these tools.

For objective 4, we use the concept of specific technology complex task self-efficacy, as described by Gupta and Bostrom (2019), which refers to an individual's belief in their own capability to successfully complete intricate tasks using specific technologies. It centers on individuals' confidence and perceived proficiency in utilizing advanced or specialized technologies to effectively accomplish complex objectives, which is the case of solving problems with the use of SOST's advanced features.

Objective 5 is to determine the impact of principal support (Armenakis et al., 1999) on the intention to use SOST's advanced features. Principal support refers to the perception or belief that organizational leaders endorse the organizational change and exhibit the motivation to ensure its successful implementation.

Finally, objective 6 is to determine if the awareness of the potential usefulness of SOST's advanced features has an impact on the intention to use those tools.

5.2. Research Type and Methodology

The purpose of this analytical research is to understand and measure the relationships between several variables, including: a) five variables resulted from the literature review, i.e., discrepancy, principal support, personal innovativeness, specific technology complex task self-efficacy, and self-regulated learning; b) one variable resulted from the qualitative study, i.e., awareness of the potential usefulness; c) five variables adapted from the UTAUT original model, i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, and intention to use.

Data analyses will use statistical techniques such as correlation (Glatthorn & Joyner, 2005), regression, and factor analysis to identify patterns and relationships among variables and structural equation models to test the study hypotheses. As a result, the research process is quantitative and based on the positivist paradigm, which involves conducting objective research to establish facts, test hypotheses, predict cause-and-effect relationships, or verify theoretical foundations (Fortin et al., 2009). The logic of the research followed a deductive approach, where theoretical conceptualizations were developed and tested through empirical observations (Creswell & Creswell, 2017).

In what concerns the results of this research, this is basic research, also known as pure or fundamental research. This is a type of research that aims to increase knowledge and understanding of the underlying principles and concepts of a particular field of study. However, it is expected that the findings of this research eventually lead to practical applications, which are oriented toward applied research (OECD, 2002). Specifically, the study may uncover the causes of the underutilization of SOST so that organizations can adopt policies and practices that enable employees to use the advanced features of these tools to improve their task execution efficiency.

5.3. Theoretical Framework and Hypothesis Development

The aim of this study is to analyze the causes of the underutilization of the advanced features of feature-rich applications and its impact on the inefficient execution of administrative tasks in companies. To do so, the theoretical UTAUT model (Venkatesh et al., 2003) of technology acceptance and adoption was considered. Constructs taken from literature and qualitative study were added to the model. Thus, this section will present the adopted theoretical model and the underlying hypotheses.

The qualitative study confirmed the relevance of some variables identified in the literature review and explored in the interviews conducted with the employees from the four companies. These variables are discrepancy and principal support (Armenakis et al., 1999), personal innovativeness (Agarwal & Prasad, 1998), self-regulated learning (B. Zimmerman, 1989), and specific technology complex task self-efficacy (Gupta & Bostrom, 2019). The qualitative study also highlighted the importance of a new concept, i.e., not found in the literature review, which is referred to as awareness of the potential usefulness. These concepts will be described further ahead. Thus, the UTAUT model was extended by introducing all these variables (Figure 5).

The original UTAUT model has four key variables, which are performance expectancy, effort expectancy, social influence, and facilitating conditions. The first three variables influence the behavioral intention to use a technology (Venkatesh et al., 2003), which impacts on the use behavior variable. In this theoretical model, the facilitating conditions variable directly influences the use behavior variable. This model has been used in studies conducted in different contexts and with different technologies and uses, proving to be an important theoretical model in the adoption and use of technologies.

Performance expectancy refers to the users' perception of the expectation of obtaining an advantage/benefit/gain through the use of technology. Effort expectancy represents users' perception of the degree of ease of use of the technology. Social influence means the recognition of the importance of the influence of third parties, such as family and friends, on the use of technology. These three constructs have been shown to predict the intention to use technology (Venkatesh et al., 2003, 2012, 2016). The facilitating conditions variable, that is, the perception of the existence of favorable conditions for the use of the technology, has an influence on the use behavior variable in the original model.

The present study is framed within the UTAUT theoretical model, but introduces some changes. Specifically, we chose to add a direct relationship between these four constructs and the variable intention to use, i.e., the intention that the user declares to have about using the technology. This decision derives from the interviews, i.e., the idea that some employees are not effectively using the advanced features of SOST because they are not aware of their potential. In this sense, the original model was adapted to measure the impact of the variables of performance expectancy, effort expectancy, social influence, and facilitating conditions on the intention to use advanced features, and not on the actual use of those features, since most employees did not use many of the advanced features because they were not aware that these could improve the efficiency of their tasks.

The construct of awareness of potential usefulness emerged from the qualitative study. Although not found in the literature, it is defined in this study as the level of comprehension concerning both the purpose and functionalities of a specific technology, along with the acknowledgment of its value for effectively completing a particular task. This new concept is not to be confused with Gupta and Bostrom's (2019) specific technology complex task self-efficacy, which refers to the users' competencies necessary to operate a technology in a demanding task execution context, while awareness of potential usefulness is not about knowing how to operate the tool, but rather having knowledge about its potential. Many interviewed employees reported being unaware of the potential of advanced features of SOST, which may indicate that they do not know they could improve task execution by using those advanced features. Thus, not knowing about an opportunity offered by an advanced feature of SOST may result in a lower intention to use the tool.

Based on these indications, the following hypothesis was formulated in the study:

H1: Awareness of the potential usefulness will be positively related to the intention to use the tool.

The construct of discrepancy comes from the field of organizational change and is part of the Five Key Change Beliefs identified by Armenakis et al. (1999). This concept suggests that there may be potential for organizational improvement if an unfavorable current situation is acknowledged, which can then evolve into a desired future state. Therefore, discrepancy represents the awareness that something can change and that the change can be beneficial.

The concept of discrepancy was adapted in the present study from the original model proposed by Armenakis et al. (1999), indicating that when there is recognition that tasks can be executed with greater efficiency, this can result in organizational improvements. With this framework, it is assumed that the recognition of a discrepancy increases the expectation of improved task performance. In the context of SOST usage, it is expected that employees who perceive an opportunity to improve task efficiency through the use of advanced features also have an expectation of improving their performance. This association was identified in the exploratory study, with employees recognizing that there was room for improvement in task execution using these tools. Thus, the following hypothesis was formulated:

H2: Discrepancy will be positively related to performance expectancy.

Personal innovativeness (Agarwal & Prasad, 1998) represents a person's willingness to experiment a new technology. Users who show this predisposition to learn/adopt new technologies can be identified as early adopters and serve as change agents within an organization. Therefore, their role can be important in the adoption of new technologies or technological functionalities. In the exploratory study that preceded this quantitative study, it was found that several employees referred to the contribution of their interest in innovation (appetite for innovation) to achieving results. Thus, it was considered that individuals who have this profile of high personal innovativeness may also have higher expectations regarding performance, as well as a better understanding of the effort required to use a particular advanced functionality. In this sequence, the following hypotheses were formulated:

H3: Personal innovativeness will be positively related to performance expectancy.

H4: Personal innovativeness will be positively related to effort expectancy.

The concept of self-regulated learning, described by Zimmerman (1989), represents the degree of individual involvement in their self-learning process. Therefore, it signifies the ability to learn autonomously. This concept was developed in the social-cognitive field of learning, and it is possible to be related to the concept of self-efficacy, namely computer self-efficacy, which determines an individual's ability to efficiently use the computer to solve tasks (Compeau & Higgins, 1995; Marakas et al., 1998). During the qualitative study, several interviewees emphasized the importance of self-learning in terms of knowing how to operate the advanced features of SOST. Thus, the following hypotheses were formulated:

H5: Self-regulated learning will be positively related to performance expectancy.

H6: Self-regulated learning will be negatively related to effort expectancy.

The concept of specific technology complex task self-efficacy (SC-SE) was created to indicate personal effectiveness in using complex applications and performing demanding tasks (Gupta & Bostrom, 2019), such as those which are the focus of feature-rich software. This variable was created to measure the ability to operate a specific software tool. The concept emerged from the need to distinguish different types of computer self-efficacy, with Gupta and Bostrom (2019, p. 75) defining this construct as "judgment about the knowledge needed to use a specific software application (e.g., Excel) to accomplish a self-conceptualized business/work-related task". Gupta and Bostrom (2019) used a scale by Hollenbeck and Brief (1987) to measure skills in using the Microsoft Excel program. Thus, it was considered that the concept of SC-SE could be used in the context of feature-rich software applications, including SOST. In this case, the aim was to measure individual skills to use the advanced functionalities of SOST. In the qualitative study, many employees highlighted the importance of skills and knowledge needed to use the advanced features of SOSTs, which are highly complex. The interviewees recognized the importance of these features in task performance efficiency. They also acknowledged that greater mastery of the tools reduces the perception of effort required for their execution. Thus, the following hypotheses were formulated:

H7: Specific technology complex task self-efficacy will be positively related to performance expectancy.

H8: Specific technology complex task self-efficacy will be negatively related to effort expectancy.

The variable principal support consists of the perception that top leaders are critical to the success of organizational change (Armenakis et al., 1999). Like the previously mentioned concept of discrepancy, this concept is integrated into the Five Key Change Beliefs model (Armenakis et al., 1999). Although the facilitating conditions construct in the UTAUT model considers favorable conditions for using technology, it does not specifically focus on top management support, which in this case would be towards the effective use of the advanced features of SOST. In the exploratory study, many interviewees highlighted the importance of support and incentives provided by top management regarding the use of these tools. Based on this, the following hypotheses were formulated:

H9: Principal support will be positively related to social influence.

H10: Principal support will be positively related to facilitating conditions.

Finally, as stated before, the variables performance expectancy, effort expectancy, and social influence are predictors of the intention to use, and the variable facilitating conditions is a predictor of usage in the UTAUT model (Venkatesh et al., 2003, 2012, 2016). Therefore, the following hypotheses were formulated:

H11: Performance expectancy will be positively related to the intention to use.

H12: Effort expectancy will be positively related to the intention to use.

H13: Social influence will be positively related to the intention to use.

H14: Facilitating conditions will be positively related to the intention to use.

With the development of these hypotheses, a theoretical model (Figure 5) was created that encompasses the variables of the UTAUT original model and the set of other identified and defined variables.

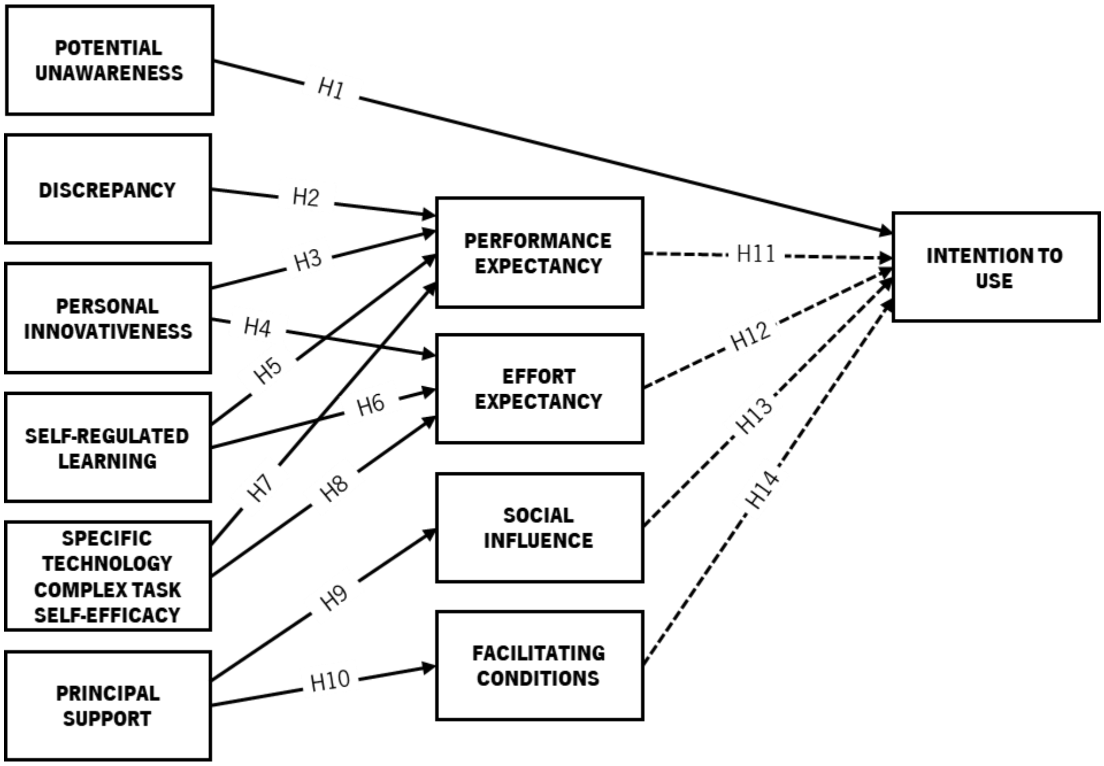

Figure 5. *Theoretical model and hypothesis development.*

By using these variables and the designed model, we sought to determine new causal relationships regarding the variables of the UTAUT original model, with an impact on the intention to use the advanced features of SOST.

5.4. Data Collection Instrument

A questionnaire (Appendix 4) was created to analyze the use of advanced features of SOST by employees of the four companies where the study was conducted. The questionnaire includes scales that allow for the measurement of the eleven variables included in the theoretical model. The description of the scales considered is provided in the following sections.

5.4.1. UTAUT Model Scales

The scales used to measure the variables of performance expectancy, effort expectancy, social influence, facilitating conditions, and intention to use were developed by Venkatesh et al. (2003) based on existing theories such as the Theory of Reasoned Action (Fishbein & Ajzen, 1975) from the field of social psychology, the Technology Acceptance Model (Davis, 1989) from the domain of information systems, the Motivational Model (Davis et al., 1992) from the field of psychology, the Theory of Planned Behavior (Ajzen, 1991) from the field of social psychology, the Model of Personal Computer Utilization (Thompson et al., 1991), the Innovation Diffusion Theory (Rogers, 1995) from the field of sociology, and the Social Cognitive Theory (Bandura, 1986) regarding human behavior.

These scales were created in the context of technology adoption. Therefore, performance expectancy represents the degree of expectation an individual has regarding the performance gains at work that can be obtained through the use of a particular system or technology. On the other hand, effort expectancy represents the expectation of effort that an individual thinks they will have to expend to use a system or technology efficiently and effectively. The construct of social influence represents the influence that family, friends, colleagues, or other people may have on the individual to encourage their use of a particular technology or information system. This usage can be influenced by facilitating conditions, i.e., the expectation that organizational conditions and existing technical infrastructure can assist in the use of a system or technology. Finally, intention to use represents the intention to use a particular system or technology.

The original UTAUT model (Venkatesh et al., 2003) was tested in three studies carried out on the same sample at different times. The scales of the variables performance expectancy, effort expectancy, social influence, facilitating conditions, and intention to use obtained good psychometric properties, with internal consistency reliability loadings above 0.80, which is above the acceptable level of 0.7 (Nunnally, 1979). The high reliability of these scales motivated their use in 147 studies published in leading journals and conferences (Tamilmani et al., 2021).

In this research, the performance expectancy scale was kept with its original four items. The same happened with the effort expectancy, social influence, and facilitating conditions scales, each with four items, and intention to use with its original three items (Table 6). Likert scales were used, ranging from 1 (totally disagree) to 5 (totally agree). The wording of the items was adapted to the context of the study, that is, to the context of the use of advanced features of SOST. Thus, the expression "the system" in the original scales was replaced by the expression "SOST's advanced features." As an example, the original item "I would find the system useful in my job" was adjusted to "I would find SOST's advanced features useful in my job".

Table 6. *UTAUT original model scales and Cronbach's Alpha.*

Variable	Items	Cronbach's Alpha
Performance expectancy	1. I would find the system useful in my job. 2. Using the system enables me to accomplish tasks more quickly. 3. Using the system increases my productivity. 4. If I use the system, I will increase my chances of getting a raise.	α=0.90 α=0.90 α=0.94
Effort expectancy	1. My interaction with the system would be clear and understandable. 2. It would be easy for me to become skillful at using the system. 3. I would find the system easy to use. 4. Learning to operate the system is easy for me.	α=0.90 α=0.92 α=0.92
Social influence	1. People who influence my behavior think that I should use the system. 2. People who are important to me think that I should use the system. 3. The senior management of this business has been helpful in the use of the system. 4. In general, the organization has supported the use of the system.	α=0.91 α=0.92 α=0.92
Facilitating conditions	1. I have the resources necessary to use the system. 2. I have the knowledge necessary to use the system. 3. The system is not compatible with other systems I use.* 4. A specific person (or group) is available for assistance with the system's difficulties.	α=0.85 α=0.88 α=0.88
Intension to use	1. I intend to use SOST's advanced features in the next <n> months. 2. I predict I will use SOST's advanced features in the next <n> months. 3. I plan to use SOST's advanced features in the next <n> months.	α=0.89 α=0.88 α=0.90

* Reverse coded
α scores - studies conducted at three different points in time with the same sample (Venkatesh et al., 2003).

5.4.2. Discrepancy and Principal Support Scales

The scales for measuring the constructs of discrepancy and principal support were created based on the study by Armenakis et al. (2007). The authors developed items to evaluate change recipients' beliefs, which are necessary for implementing an organizational change. Recipients are the targets of organizational change, who in turn may be led by change agents in a change process. The authors defined five key change recipients' beliefs, which they designated as discrepancy, appropriateness, efficacy, principal support, and valence. In this study, the discrepancy construct was applied, which represents the perception that a certain change is necessary because there is potential for improvement. The other construct used in this study was principal support, which represents the influence of change agents and organizational leaders on change recipients to effect a particular organizational change.

To validate the scales, the original authors conducted three different studies using different samples. A questionnaire with 26 items was applied. To determine that each item adequately represented the corresponding change belief, i.e., the constructs of discrepancy, appropriateness, efficacy, principal support, and valence, content validity was tested in a sample of executives, obtaining a kappa (Cohen, 1960) of 0.86. The various studies revealed acceptable internal consistency reliabilities, with Cronbach's alpha coefficients ranging from 0.69 to 0.92 for the constructs of discrepancy and principal support.

In this research, the original version of the scales from Armenakis et al. (2007) was used, with four items to measure discrepancy and four of the original six items to measure principal support (Table 7). Two items were removed from the original principal support scale as they did not fit the context of this investigation. Likert scales ranging from 1 (totally disagree) to 5 (totally agree) were used. The wording of the items was adapted to the context of the study, namely the context of using the advanced features of SOST. Thus, the expression "SOST's advanced features" was introduced into the original items to identify the context of this study. For example, the original item "We need to change the way we do some things in this organization" was adjusted to "We need to change the way we use SOST's advanced features in this organization". In another example, the original expression "My immediate manager is in favor of this change" was adjusted to "My immediate manager is in favor of a change that promotes the effective use of SOST's advanced features".

Table 7. *Discrepancy and principal support scales and Cronbach's Alpha.*

Variable	Items	Cronbach's Alpha
Discrepancy	1. We need to change the way we do some things in this organization. 2. We need to improve the way we operate in this organization. 3. We need to improve our effectiveness by changing our operations. 4. A change is needed to improve our operations.	α=0.92 α=0.89 α=0.70
Principal support	1. The top leaders in this organization are "walking the talk", 2. The top leaders support this change. 3. My immediate manager is in favor of this change. 4. My immediate manager encourages me to support the change. 5. Most of my respected peers embrace the proposed organizational change.* 6. The majority of my respected peers are dedicated to making this change work.*	α=0.87 α=0.75 α=0.69

* Not used in this research
α scores - three studies conducted with different samples (Armenakis et al., 2007).

5.4.3. Personal Innovativeness Scale

Personal innovativeness is a construct from the domain of information technology, and represents individual characteristics that have an influence on the adoption and use of technological innovations. Individuals with a high degree of personal innovativeness can act as change agents in an organization, facilitating the adoption of new systems or technologies by other individuals. The scale for measuring personal innovativeness was developed by Agarwal and Prasad (1998) through previous studies that measured similar constructs. The need for this development was related to the weak convergent validity or weak internal consistency of the previously studied scales. Thus, a scale with four items was created that describes typical behaviors in the context of innovation in information technologies. The items were rated on a Likert scale from 1 to 7, with "Strongly disagree" and "Strongly agree" at the initial and final points of the scale. In terms of reliability, the scale obtained a Cronbach's alpha of 0.84, revealing good internal consistency.

In the current investigation, 4 items from the scale of Agarwal and Prasad (1998) were used to measure personal innovativeness in the context of the use of advanced features of SOST (Table 8). A five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree) was used because it allows sufficient variability to support parametric tests (Norman, 2010) and is easier for respondents to understand (Boulmetis & Dutwin, 2014), especially in large questionnaires, as is the case in this study. The wording of the items was adapted to the context of the study, that is, to the context of the use of advanced features of SOST. Thus, the phrase "SOST's advanced features" was introduced into the original items to identify the context of this study. As an example, the original item "I like to experiment with new information technologies" was adjusted to "I like to experiment with new SOST's advanced features".

Table 8. *Personal innovativeness scale and Cronbach's Alpha.*

Variable	**Items**	**Cronbach's Alpha**
Personal innovativeness	1. If I heard about a new information technology, I would look for ways to experiment with it. 2. Among my peers, I am usually the first to try out new information technologies. 3. I like to experiment with new information technologies. 4. In general, I am hesitant to try out new information technologies.*	α=0.84

* Reverse coded

5.4.4. Self-regulated Learning Scale

The self-regulated learning construct represents a set of individual thoughts, feelings, and actions that are oriented towards the pursuit of learning goals (Zimmerman, 2002), that is, it measures the individual capacity for self-directed learning. Magno (2010) developed the scale to measure the self-regulated learning construct based on the original framework of Zimmerman and Martinez-Pons (1986). Initially, 222 items were formulated, from which seven factors were extracted, six of them consistent with the original scale. In total, 51 items were validated. The seven factors analyzed obtained Cronbach's alpha between 0.73 and 0.87, revealing a satisfactory internal consistency.

In this study, 11 items from the scale developed by Magno (2010) were used (Table 9). The items were measured using Likert scales ranging from 1 (totally disagree) to 5 (totally agree). The wording of the items did not need to be adapted to the context of the study on advanced features of SOST.

Table 9. *Self-regulated learning scale and Cronbach's Alpha.*

Variable	Items	Cronbach's Alpha
Self-regulated learning	1. I make a summary of my readings. 2. I make outlines as guides while I am studying. 3. I summarize every topic we would have in a learning environment. 4. I make a timetable of all the activities I have to complete. 5. I plan the things I have to do in a week. 6. If I am having any difficulty, I inquire for assistance from an expert. 7. I welcome peer evaluations for every output. 8. I monitor my improvements in doing a certain task. 9. I ask for feedback on my performance from someone who is more capable. 10. I am open to changes based on the feedback I received. 11. I use a variety of sources in doing my work.	α=0.73 and α=0.87

5.4.5. Specific Technology Complex Task Self-Efficacy Scale

Individual self-efficacy refers to the belief in one's ability to perform a particular behavior (Bandura, 1986), which in turn is considered a good predictor of task performance (Gist, 1986). There are several instruments to measure individual self-efficacy. However, the specific technology complex task self-efficacy (SC-SE) scale was created by Hollenbeck and Brief (1987) as a result of the need for a specific instrument to measure the self-efficacy required for the use of specific technologies to support the completion of complex tasks. This concept is relevant to this research, as the advanced features of SOST apply to the completion of more complex tasks. Furthermore, SOST are considered feature-rich applications, which also implies the existence of specific scales adapted to their peculiarities. In the original study, a Cronbach's alpha of 0.89 was obtained. More recently, Gupta and Bostrom (2019) applied this five-item scale to a sample of Excel students, obtaining an alpha of 0.73, indicating a satisfactory reliability value.

In this research, the original scale with five items was used (Table 10) with Likert scales ranging from 1 (totally disagree) to 5 (totally agree). The wording of the items was adapted to the context of the study, that is, to the context of the use of SOST's advanced features. Thus, the expression "SOST's advanced features" was introduced into the original items to identify the context of this study. For example, the original item "I have mastered Excel use" was adjusted to "I have mastered SOST's advanced features use".

Table 10. *Personal innovativeness scale and Cronbach's Alpha.*

Variable	Items	Cronbach's Alpha
Specific technology complex task self-efficacy	1. I have mastered Excel use. 2. I cannot yet use Excel as well as I would like. 3. I am able to perform tasks well using Excel. 4. It is not yet possible for me to use Excel at the level I like.* 5. I think my ability to use Excel can be improved substantially.	α=0.89

* Reverse coded

5.4.6. Awareness of the potential usefulness Scale

During the qualitative study, several interviewees stated that they were unaware of many of the advanced features available in SOST, which would imply that they did not have an adequate perception of the potential improvement in task efficiency that could result from using these features. Specifically, if they are unaware of an advanced feature or do not have a clear understanding of its potential, they will also not know that the feature may be useful to them. This construct, which was not identified in the literature review, was referred to as awareness of the potential usefulness and indicates the level of knowledge that the user has about the potential of the advanced features of feature-rich applications to efficiently perform their tasks.

Therefore, we chose to use this concept in this quantitative study, constructing a scale with five items (Table 11) to assess employees' level of knowledge about the potential of advanced features of SOST. Likert scales ranging from 1 (totally disagree) to 5 (totally agree) were used.

Table 11. *Awareness of the potential usefulness scale.*

Variable	Items
Awareness of the Potential Usefulness	1. I can identify every SOST's advanced features. 2. I know what every SOST's advanced features are for. 3. I am able to identify the potential of every SOST's advanced features to improve task efficiency execution. 4. I know which is the most efficient SOST's advanced feature for each task I need to perform. 5. I use the most efficient SOST's advanced feature for each task I need to perform.

5.5. Data Collection Procedure

The questionnaire application was preceded by a pre-test aimed at ensuring its validity and comprehensibility, as well as to identify possible errors in its construction. For this purpose, the questionnaire was applied to 12 employees from companies similar to the profile of the companies that comprise the sample. After completing the questionnaire, respondents were invited to report difficulties in interpreting the items and give their opinions on the clarity of the questions. Some of the pre-test participants reported having some difficulty identifying the advanced features of the SOST. Following this indication, it was decided to clarify the question by presenting specific examples. Except for this point, respondents confirmed that the questionnaire was formulated in a clear manner and was easy to understand. The response time for the questionnaire ranged from 9 to 13 minutes.

After conducting the pre-test and subsequently modifying the instrument, the final version of the questionnaire was used in the data collection process. The form was built on the *Google Forms* platform and was applied exclusively online during the months of December 2022 and January 2023. This platform was chosen due to its ease of remote sharing of the questionnaire by company employees, its responsiveness on mobile devices, and its mechanisms that facilitate the data export to other platforms. An introduction to the research with a direct link to the online questionnaire was prepared. This text was explained to the human resources directors of each participating company, who internally disseminated it via email to employees who fit the defined profile. In addition to this text, the questionnaire itself presented, in the header, a description and definition of the research objectives, the identification of the researcher, the supervisors, and the educational institution. It also presented a definition of the SOST and their respective examples, as well as their advanced features. Participants were also informed about the confidentiality and anonymity of the data, as well as the option to interrupt their participation at any time.

In order to encourage the number of responses to the questionnaire, prizes were defined to be drawn from each of the four participating companies in the study. These prizes consisted of 2-night, 3-day holiday accommodation packages. The respondent's qualification for the prize draw was subject to a complete response to all questionnaire items.

5.6. Sample

A non-probabilistic sampling technique was used in this study, which consisted of the constitution of a convenience sample. This type of sampling involves the selection of an available sample chosen by the researcher, as opposed to the probabilistic method, in which all individuals in the population have an equal probability of being selected for the sample. Therefore, in this situation, the representativeness of the data cannot be generalized to the population under study. As there was a precursor qualitative study to the quantitative study, the selection of companies followed the criteria already described earlier in chapter 3, section 3.3. Thus, the four companies previously selected and targeted in the qualitative study are the same where the questionnaire was applied.

A total of 142 questionnaires with valid responses were obtained from the four companies included in this research. The summary of the sociodemographic data of the sample can be found in Table 12.

This sample had a relatively even distribution across each of the four participating companies (SP with 25.4%, BM with 20.4%, PS with 26.8%, and TW with 27.5%). In terms of gender distribution, 50.7% of respondents were women and 49.3% were men. Regarding age distribution, the average age was 36.6 years, with a high standard deviation (SD=9.54). The youngest respondent was 22 years old and the oldest was 62 years old. The age group with ages up to 30 years accounted for 33.8% of respondents. The majority of respondents belonged to the age group between 31 and 50 years (57.7%). Individuals over 50 years old represented only 8.5% of the sample. This age diversity is also reflected in the level of professional experience, with two employees in their first year of work and one worker with 42 years of activity. The group of workers with 10 or fewer years of experience accounted for 43.7% of the sample's respondents. For the group of employees who indicated having work experience between 11 and 20 years, the percentage was 32.4%, and between 21 and 30 years, the proportion of respondents was 16.9%. Finally, employees with more than 30 years of experience accounted for only 7.0% of the total respondents.

Table 12. *Sociodemographic characterization of the quantitative study sample.*

Variable	Class	Absolute frequency	Relative frequency
Company	SP	36	25.4%
	BM	29	20.4%
	PS	38	26.8%
	TW	39	27.5%
	Total	*142*	*100%*
Gender	Female	72	50.7%
	Male	70	49.3%
	Total	*142*	*100%*
Age	<=30 years old	48	33.8%
	31-50 years old	82	57.7%
	>50 years old	12	8.5%
	Total	*142*	*100%*
Work experience	<=10 years	62	43.7%
	11-20 years	46	32.4%
	21-30 years	24	16.9%
	>30 years	10	7.0%
	Total	*142*	*100%*
Education	Incomplete high school	2	1.4%
	High school	36	25.4%
	Bachelor	66	46.5%
	Master	37	26.1%
	Doctoral	1	0.7%
	Total	*142*	*100%*
Job function	Administrative	17	12.0%
	Finance	19	13.4%
	Human resources	14	9.9%
	Logistics	32	22.5%
	Marketing	12	8.5%
	Production	33	23.2%
	Quality	13	9.2%
	Information technology	2	1.4%
	Total	*142*	*100%*

The largest group in terms of education level is represented by 46.5% of people with a bachelor's degree, followed by employees with completed high school (25.4%) and those who indicated having a master's degree (26.1%). The percentage of employees with qualifications lower than high school is marginal (1.4%), as is the percentage of Ph.D. holders (only 0.7%). In terms of functional areas where employees perform their activities, eight major areas were identified. In decreasing order of importance in the sample, there are production employees (23.2%), followed by logistics (22.5%), finance (13.4%), administrative (12.0%), human resources (9.9%), quality (9.2%), and marketing (8.5%). The information technology area accounted for only two respondents (1.4% of the total).

5.7. Quantitative Data Analysis

The statistical analysis of the data was performed using version 27 of the IBM SPSS (Statistical Package for the Social Sciences) software and version 26 of the IBM AMOS (Analysis of Moment Structures) software, both for the Microsoft Windows operating system.

The data collected in *Google Forms* was imported into the Microsoft Excel program, where it was coded. Afterwards, the coded data were imported into SPSS, where descriptive analysis and exploratory factor analysis were performed. Using the AMOS software, confirmatory factor analyses were then carried out. Finally, a structural equation model was estimated in that program to test the theoretical model, the formulated hypotheses, and the causal relationships between variables.

5.8. Quantitative Study Results

In this chapter, the results obtained through statistical analysis will be presented. The components of the scales used in data collection will be analyzed through exploratory factor analysis. This will be followed by a confirmatory factor analysis, a Pearson correlation analysis, and an analysis of common method bias using Harman's one-factor test. Finally, to test the hypotheses previously defined, the analysis of the structural equation model will be presented.

5.8.1. Exploratory Factor Analysis

Exploratory factor analyses were conducted for each of the eleven scales used in the questionnaire, in which the principal components were extracted, in order to reduce the number of variables for subsequent confirmatory factor analyses and structural equation modeling.

To assess the feasibility of exploratory factor analysis by variable, we considered the values obtained in the Kaiser-Meyer-Olkin (KMO) test and Bartlett's sphericity test regarding their principal components. For each factor, items with loadings greater than 0.50 were considered relevant, as suggested by MacCallum et al. (1999) for samples with dimensions between 100 and 200 participants.

To verify the reliability of the instrument, which indicates whether the obtained results are adequate, the calculation of Cronbach's alpha was performed, and values above 0.70 (Nunnally, 1979) were considered relevant.

a) Exploratory Factor Analysis of Performance Expectancy

The items of the performance expectancy scale were subjected to an exploratory factor analysis using the principal component method. Eigenvalues greater than 1 were extracted in order to search for correspondence with the theoretical structure.

This factor analysis was carried out with the items that compose the performance expectancy scale of Venkatesh et al. (2003). The obtained value for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.667 and Bartlett's sphericity test was significant ($\chi 2$ (3) = 234.53 and $p<0.000$), meeting the initial requirements (Field, 2013). From the component analysis, only one component was extracted with an eigenvalue greater than 1, which explains 79.59% of the total variance. These values were obtained after excluding the item "If I use SOST's advanced features, I will increase my chances of getting a raise", which had a loading lower than recommended (Field, 2013).

Table 13 presents the component matrix obtained as well as the explained variance and the level of internal consistency (Cronbach's Alpha) obtained for the factor. Thus, this component integrated three out of the four items from the original scale. The factor was designated as "Performance expectancy" (α=0.869), indicating the user's expectation of increasing their performance (efficiency) with the use of advanced features of the SOST.

Table 13. *Performance expectancy scale loading factors.*

Items	Factors' loadings
2. Using SOST's advanced features enables me to accomplish tasks more quickly.	0.942
3. SOST's advanced features increases my productivity.	0.866
1. I would find SOST's advanced features useful in my job.	0.866
Explained variance (%)	79.59
Cronbach's Alpha	0.869

The results indicate that, after eliminating the item with low loading, the scale adapts to the measurement of the performance expectancy variable, as the construct definition is sufficiently concise and the values of internal consistency are satisfactory and close to those obtained by the original authors (Venkatesh et al., 2003).

b) Exploratory Factor Analysis of Effort Expectancy

An exploratory factor analysis was conducted on the items of Venkatesh et al. (2003) effort expectancy scale using the principal component method to obtain correspondence with the originally proposed structure, yielding eigenvalues above 1.

The necessary requirements for subsequent analysis, as described by Field (2013), were met with a Kaiser-Meyer-Olkin (KMO) sampling adequacy measure of 0.746 and a significant Bartlett's test of sphericity ($\chi 2$ (6) = 219.53, p<0.000). The component analysis revealed the extraction of a single component with an eigenvalue greater than 1, explaining 65.68% of the total variance.

The component matrix values and the levels of internal consistency (Cronbach's alpha) obtained for the factor are presented in Table 14. The four items of the original scale were grouped into a single component, which was named "Effort expectancy" (α=0.823). This factor indicates the user's expectation of the effort required to effectively use the advanced features of the SOST.

Table 14. *Effort expectancy scale loading factors.*

Items	Factors' loadings
4. Learning to operate SOST's advanced features is easy for me.	0.861
2. It would be easy for me to become skillful at using SOST's advanced features.	0.853
3. I would find SOST's advanced features easy to use.	0.796
1. My interaction with SOST's advanced features would be clear and understandable.	0.726
Explained variance (%)	65.68
Cronbach's Alpha	0.823

The results suggest that the scale is appropriate for measuring the variable of effort expectancy since the values of internal consistency are satisfactory and close to those obtained by the original authors (Venkatesh et al., 2003).

c) Exploratory Factor Analysis of Social Influence

The items of the social influence scale were subjected to an exploratory factor analysis using the principal component method. Eigenvalues above 1 were extracted to search for correspondence with the initial theoretical structure defined.

This factor analysis was performed on the items that compose the social influence scale of Venkatesh et al. (2003), obtaining adequate values in the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.621) and in Bartlett's sphericity test ($\chi 2$ (6) = 325.97 and p<0.000). One single component with an eigenvalue above 1 was extracted from the component analysis, explaining 65.49% of the total variance.

Table 15 presents the resulting component matrix and the level of internal consistency (Cronbach's Alpha) obtained for the factor. Thus, this component integrated all the items from the original scale. The factor was named "Social influence" (α=0.824), indicating the influence that coworkers, friends, and family exert on the employee to use the advanced features of the SOST.

Table 15. *Social influence scale loading factors.*

Items	Factors' loadings
1. People who influence my behavior think that I should use SOST's advanced features.	0.851
2. People who are important to me think that I should use SOST's advanced features.	0.801
3. The senior management of this business has been helpful in the use of SOST's advanced features.	0.794
4. In general, the organization has supported the use of SOST's advanced features.	0.790
Explained variance (%)	65.49
Cronbach's Alpha	0.824

The results indicate an adequacy of the measurement of the social influence variable, as the construct definition is sufficiently concise and the values of internal consistency were satisfactory, with reference to those obtained by the original authors (Venkatesh et al., 2003).

d) Exploratory Factor Analysis of Facilitating Conditions

The facilitating conditions scale (Venkatesh et al., 2003) was also subjected to an exploratory factor analysis using the principal component method, with eigenvalues above 1 being extracted during the analysis.

The Kaiser-Meyer-Olkin (KMO) sampling adequacy test (0.623) and Bartlett's sphericity test ($\chi 2$ (3) = 32.49 and p <0.000) indicated adequate values. During the exploratory factor analysis, one component was extracted, which explained 52.86% of the total variance. It is important to note that the item "SOST's advanced features are compatible with other systems I use" was excluded from the analysis because it had a loading below 0.50.

Table 16 presents the component matrix obtained for three of the original four items of the scale, as well as the levels of internal consistency (Cronbach's Alpha) obtained for the factor (α=0.545). This factor indicates the existence of resources, assistance, and equipment that support employees in using the advanced features of SOST.

Table 16. *Facilitating conditions scale loading factors.*

Items	Factors' loadings
4. A specific person (or group) is available for assistance with SOST's advanced features difficulties.	0.748
1. I have the resources necessary to use SOST's advanced features.	0.724
2. I have the knowledge necessary to use SOST's advanced features.	0.709
Explained variance (%)	52.86
Cronbach's Alpha	0.545

The results indicate that this scale presented problems regarding the measurement of the facilitating conditions variable since one of the items did not show satisfactory loadings and, also, the value of Cronbach's Alpha was below the recommended by the literature, revealing a low level of internal consistency, indicating values much lower than those obtained by the original authors (Venkatesh et al., 2003).

e) Exploratory Factor Analysis of Intention to Use

This factor analysis was performed with the items composing the intention to use the scale by Venkatesh et al. (2003). A Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.761 was obtained and Bartlett's test of sphericity was significant, with $\chi2$ (3) = 456.42 and $p < 0.000$, meeting the initial requirements (Field, 2013). From the component analysis, a single component with an eigenvalue greater than 1 was extracted, explaining 91.72% of the total variance.

The component matrix values obtained for each of the scale items is presented in Table 17, along with the levels of internal consistency (Cronbach's Alpha) obtained for the factor. This component integrated all items from the original scale.

The factor was named "Intention to use" (α=0.955), which in the context of this investigation represents the intention to use the advanced features of SOST.

Table 17. *Intention to use scale loading factors.*

Items	Factors' loadings
3. I plan to use SOST's advanced features in the next 3 months.	0.969
2. I predict I will use SOST's advanced features in the next 3 months.	0.961
1. I intend to use SOST's advanced features in the next 3 months.	0.943
Explained variance (%)	91.72
Cronbach's Alpha	0.955

The results indicate a satisfactory and even higher level of internal consistency than those obtained by the original authors (Venkatesh et al., 2003) and recommended by the literature.

f) Exploratory Factor Analysis of Discrepancy

An exploratory factor analysis was conducted with the items comprising the discrepancy scale proposed by Armenakis et al. (2007). The measure of sample adequacy obtained through the Kaiser-Meyer-Olkin (KMO) test was 0.813, and Bartlett's test of sphericity yielded a significant result, with $\chi2$ (6) = 374.35 and $p<0.000$, indicating that the initial requirements were met. From the principal component analysis, a single component with an eigenvalue greater than 1 was extracted, explaining 77.29% of the total variance.

Table 18 presents the resulting component matrix, along with the internal consistency values (Cronbach's Alpha) obtained for the factor. All items from the original scale were integrated into this component.

Table 18. *Discrepancy scale loading factors.*

Items	Factors' loadings
2. We need to improve the way we operate with SOST's advanced features in this organization.	0.916
3. We need to improve our effectiveness by changing the way we operate with SOST's advanced features.	0.913
4. A change in the way we use SOST's advanced features is needed to improve our operations.	0.874
1. We need to change the way we use SOST's advanced features in this organization.	0.810
Explained variance (%)	77.29
Cronbach's Alpha	0.896

The factor was designated as "Discrepancy" (α=0.896), representing the perception that there is a discrepancy between the current efficiency in task execution and the potential for improvement in efficiency that could be achieved in the future by using advanced features. Such a discrepancy suggests a need for organizational change to achieve this goal.

g) Exploratory Factor Analysis of Principal Support

An exploratory factor analysis was conducted with the items that compose the principal support scale proposed by Armenakis et al. (2007). The obtained Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.631 and Bartlett's test of sphericity was significant with $\chi 2$ (6) = 299.45 and $p<0.000$, indicating that initial requirements were met. The only component extracted with an eigenvalue greater than 1 explains 64.85% of the total variance.

The component matrix obtained for each of the scale items, as well as the levels of internal consistency (Cronbach's alpha) obtained for the factor, can be found in Table 19. This component included all items from the original scale and the factor was named "Principal support" (α=0.816), which in this study represents the support and encouragement provided by leaders and intermediate managers to employees to use SOST's advanced features.

Table 19. *Principal support scale loading factors.*

Items	Factors' loadings
2. The top leaders support a change that promotes the effective use of SOST's advanced features.	0.849
3. My immediate manager is in favor of a change that promotes the effective use of SOST's advanced features.	0.842
4. My immediate manager encourages me to support the change that promotes the effective use of SOST's advanced features.	0.771
1. The top leaders in this organization are actively promoting the effective use of SOST's advanced features.	0.755
Explained variance (%)	64.85
Cronbach's Alpha	0.816

h) Exploratory Factor Analysis of Personal Innovativeness

This factor analysis was conducted with the items that compose the personal innovativeness scale of Agarwal and Prasad (1998). The obtained value for the Kaiser-Meyer Olkin (KMO) measure of sampling adequacy was 0.683, and Bartlett's sphericity test was significant, with $\chi 2$ (3) = 114.33 and p<0.000, indicating adequate values. One component was extracted with an eigenvalue greater than 1, which explains 68.79% of the total variance. These values were obtained after excluding the item "In general, I am hesitant to try out new SOST's advanced features.", which had been reverse-coded and had a loading of only 0.27 in the first extraction.

Table 20 presents the component matrix obtained for each of the remaining items, as well as the levels of internal consistency (Cronbach's Alpha) obtained for the factor. Thus, this component integrated three of the original scale's four items.

The factor was designated as "Personal innovativeness" (α=0.769), which in the context of this investigation represents individual innovation characteristics that are favorable to the use of advanced features of SOST.

Table 20. *Personal innovativeness scale loading factors.*

Items	Factors' loadings
4. I like to experiment with new SOST's advanced features.	0.867
1. If I heard about a new SOST's advanced feature, I would look for ways to experiment with it.	0.817
2. Among my peers, I am usually the first to try out new SOST's advanced features.	0.803
Explained variance (%)	68.79
Cronbach's Alpha	0.769

i) Exploratory Factor Analysis of Self-regulated Learning

The exploratory factor analysis was performed with the items comprising the self-regulated learning scale of Magno (2010). The obtained value for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.810 and Bartlett's sphericity test was significant, with $\chi 2$ (45) = 531.20 and p<0.000, values considered adequate. From the component analysis, only one component with an eigenvalue greater than 1 was extracted, explaining 40.66% of the total variance. These values were obtained after excluding the item "I am open to changes based on the feedback I received", which had a loading of only 0.45 in the first extraction.

Table 21 presents the component matrix obtained for each of the remaining items, as well as the levels of internal consistency (Cronbach's Alpha) obtained for the factor. This component integrated ten of the eleven items from the original scale and was designated as "Self-regulated learning" (α=0.834), which in the context of this research represents the individual's ability to learn on their own to use the advanced functionalities of the SOST.

Table 21. *Self-regulated learning scale loading factors.*

Items	Factors' loadings
8. I monitor my improvements in doing a certain task.	0.746
3. I summarize every topic we would have in a learning environment.	0.715
2. I make outlines as guides while I am studying.	0.683
4. I make a timetable of all the activities I have to complete.	0.676
9. I ask for feedback on my performance from someone who is more capable.	0.656
5. I plan the things I have to do in a week.	0.622
11. I use a variety of sources in doing my work.	0.611
1. I make a summary of my readings.	0.576
7. I welcome peer evaluations for every output.	0.526
6. If I am having any difficulty, I inquire for assistance from an expert.	0.523
Explained variance (%)	40.66
Cronbach's Alpha	0.834

j) Exploratory Factor Analysis of Specific Technology Complex Task Self-efficacy

Employing the principal component method, the specific technology complex task self-efficacy (SC-CE) scale by Hollenbeck and Brief (1987) was used as the basis for conducting this exploratory factor analysis. The obtained value for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.601 and Bartlett's sphericity test was significant, with $\chi 2$ (3) = 72.57 and p<0.000, meeting the initial requirements (Field, 2013). After excluding the item "I am able to perform tasks well using SOST's advanced features," which had a loading of only 0.35 in the first extraction, a single component with an eigenvalue greater than 1 was extracted, explaining 60.18% of the total variance. Thus, this component integrated three of the four items in the original scale. The results, as well as the levels of internal consistency (Cronbach's Alpha) obtained for the factor, can be found in Table 22.

Table 22. *Specific technology complex task self-efficacy scale loading factors.*

	Items	Factors' loadings
2.	I cannot yet use SOST's advanced features as well as I would like.	0.853
4.	It is not yet possible for me to use SOST's advanced features at the level I like.	0.810
1.	I have mastered SOST's advanced features use.	0.651
	Explained variance (%)	60.18
	Cronbach's Alpha	0.744

k) Exploratory Factor Analysis of Awareness of the Potential Usefulness

The items from the awareness of the potential usefulness scale, which was created specifically for this study, were used in the factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy yielded a value of 0.820, and Bartlett's sphericity test was significant, with $\chi 2$ (10) = 396.65 and p<0.000, indicating that the initial requirements were met.

The component analysis resulted in the integration of a single component with an eigenvalue greater than 1, explaining 68.75% of the total variance. Table 23 shows the component matrix for each item of the scale and the levels of internal consistency (Cronbach's Alpha) for the factor. All items from the original scale were integrated into this single component.

Table 23. *Awareness of the potential usefulness scale loading factors.*

	Items	Factors' loadings
2.	I know what every SOST's advanced features are for.	0.849
3.	I am able to identify the potential of every SOST's advanced features to improve task efficiency execution.	0.835
1.	I can identify every SOST's advanced features.	0.827
4.	I know which is the most efficient SOST's advanced feature for each task I need to perform.	0.821
5.	I use the most efficient SOST's advanced feature for each task I need to perform.	0.812
	Explained variance (%)	68.75
	Cronbach's Alpha	0.886

The factor was designated as "awareness of the potential usefulness" (α=0.886) which, as previously mentioned, represents the degree of knowledge of the potential of advanced features of SOST for improving task execution efficiency.

5.8.2. Descriptive Statistics and Preliminary Analyses

After the exploratory factor analysis of the scales, an analysis of the means and standard deviation for each of the variables was carried out, which can be consulted in Table 24.

The performance expectancy, effort expectancy, social influence, facilitating conditions, and intention to use scales, which derived from the UTAUT original model, obtained high means. A mean of 4.37 (SD=0.614) for performance expectancy indicates that employees have high expectations for improved performance with the use of advanced features of the SOST. Effort expectancy indicates the perception of high effort (M=3.68, SD=0.630) regarding the use of these advanced features. The mean for social influence was 3.47 (SD=0.713), indicating the importance of the influence that family, friends, and others have on employees regarding the use of advanced features of the SOST. The perception of favorable conditions in terms of equipment and support for the use of advanced features of the SOST was also high, with a mean of 3.42 (SD=0.716). Finally, with respect to the variables of the UTAUT model that were analyzed in this study, the surveyed employees showed intention to use the advanced features of the SOST in the short term, as the mean obtained was 3.96 (SD=0.787).

The discrepancy and principal support scales revealed identical results. There is a high perception that there are opportunities for improvement if the advanced features of the SOST are used (discrepancy), considering the mean obtained of 3.72 (SD=0.795). There is also the perception of support and encouragement for the use of advanced features of the SOST by top managers and middle managers (principal support), as evidenced by the obtained mean (M=3.63, SD=0.727).

There was also a high perception regarding employees' personal innovativeness characteristics, which can positively influence the use of advanced features of the SOST (M=3.60, SD=0.755). The same applied to the perception of the individual capability of the respondent employees for their involvement in self-learning processes, which would facilitate learning of the advanced features of the SOST (M=3.69, SD=0.633).

Table 24. *Descriptive statistics.*

Variables	Nr	Mean (SD)	Cronbach's Alpha
Performance expectancy	3	4.373 (0.614)	0.869
Effort expectancy	4	3.676 (0.630)	0.823
Social Influence	4	3.467 (0.713)	0.824
Facilitating conditions	3	3.418 (0.716)	0.545
Intention to use	3	3.960 (0.787)	0.955
Discrepancy	4	3.720 (0.795)	0.896
Principal support	4	3.627 (0.727)	0.816
Personal innovativeness	3	3.596 (0.755)	0.769
Self-regulated learning	10	3.688 (0.633)	0.834
Specific Tech. Complex Task Self-efficacy	3	2.007 (0.763)	0.853
Awareness of the Potential Usefulness	5	2.210 (0.730)	0.886

Nr – number of items for each factor

However, the means of the specific technology complex task self-efficacy and awareness of the potential usefulness variables reveal lower values. In the case of the former factor, the mean of 2.01 (SD=0.763) indicates that employees have a low degree of skills in using the advanced features of the SOST. Regarding the awareness of the potential usefulness variable, the mean of 2.21 (SD=0.730) also indicates that employees have a low level of knowledge of the potential of the advanced features of the SOST, which would have consequences regarding their use, as they would not have incentives to use them if they were unaware of their potential.

5.8.3. Correlation Analysis

The Pearson correlation coefficients for the scales used in this study are presented in Table 25. The significance associated with the Pearson coefficient indicates whether the relationship presented is statistically significant or not. The guidelines of Cohen (1988) were followed to determine the degree of association between variables, where values of r between 0.10 and 0.30 are considered weak correlations, between 0.30 and 0.50 represent moderate correlations, and above 0.50 are considered strong correlations. In this section, the results of the descriptive analysis and bivariate correlation analysis are presented. The results obtained allow us to identify variables with positive or negative relationships. However, the predictive value of these associations will only be determined with the estimation of the structural equation model to be presented in section 5.8.5. The Harman's single factor test was conducted on the eleven variables in the theoretical model to check if the influence of one construct on another could be inflated due to common method bias. The total variance explained was 24.43%, a value below the recommended maximum limit of 50% (Podsakoff et al., 2003). Therefore, it is concluded that there are no problems associated with common method bias in this study.

Based on the data presented in Table 25, we can observe several significant correlations with moderate strength. Performance expectancy shows a moderate positive correlation with effort expectancy (r=0.408; p <0.01), social influence (r=0.335; p <0.01), intention to use (r=0.448; p <0.01), and personal innovativeness (r=0.322; p <0.01). This means that an expectation of improved performance using SOST's advanced features tends to increase the perception of the degree of ease required for their execution, increase social influence towards the use of SOST, and enhance the intention to use these tools.

In addition, a moderate negative correlation was found between performance expectancy and specific technology complex task self-efficacy (r=-0.386; p <0.001). This correlation implies that performance expectancy tends to decrease in employees who have demonstrated higher proficiency in using advanced features of SOST. This situation means that employees with lower proficiency in using these tools have a higher perception of their potential compared to users who have better knowledge of these advanced features.

Regarding effort expectancy, it shows a moderate positive correlation with social influence (r=0.363; p <0.01), facilitating conditions (r=0.331; p <0.01), intention to use (r=0.367; p <0.01), personal innovativeness (r=0.432; p <0.01), self-regulated learning (r=0.315; p <0.01), and awareness of the potential usefulness (r=0.318; p <0.01). Thus, the perception of a higher degree of ease in using the advanced features of SOST tends to increase their social influence, enhance the perception of available resources for supporting their use (facilitating conditions), and increase the intention to use them. Also, it tends to be related to employees with higher personal innovativeness profiles, with adopters of the self-regulated learning process, and with persons with higher awareness of the advanced features potential.

Social influence also shows significant correlations with other variables. Besides the correlations with performance expectancy and effort expectancy mentioned before, it also shows moderate positive correlations with facilitating conditions (r=0.401; p <0.01), intention to use (r=0.373; p <0.01), and awareness of the potential usefulness (r=0.328; p <0.01). Employees who recognize greater social influence for the use of SOST's advanced features tend to perceive the existence of facilitating conditions for their use, demonstrate a higher intention to use these tools, and also possess a better understanding of the potential of advanced features.

Facilitating conditions, besides the correlations mentioned above with effort expectancy and social influence, also show moderate positive correlations with principal support (r=0.480; p <0.01) and awareness of potential usefulness (r=0.337; p <0.01). Therefore, people who believe that there is adequate support for using the advanced features of SOST also tend to perceive greater top management support. These employees also tend to have a better understanding of the potential of the advanced features of SOST.

Intention to use shows significant correlations with other variables, namely with performance expectancy, effort expectancy, and social influence, as mentioned before. It also shows moderate positive correlations with personal innovativeness (r=0.426; p <0.01) and awareness of potential usefulness (r=0.305; p <0.01). This means that employees with a personal profile that is open to innovation tend to show more intention to use the advanced features of SOST, as well as demonstrate a greater understanding of their potential.

Personal innovativeness shows significant correlations with other variables presented before, and also moderate positive correlations with self-regulated learning (r=0.313; p <0.01) and awareness of potential usefulness (r=0.388; p <0.01). Therefore, a more innovative personal profile tends to be associated with employees who independently develop the learning of advanced features of the SOST. These profiles also correlate with employees who have a greater understanding of the potential of these advanced features.

Finally, self-regulated learning shows a moderate positive correlation with awareness of potential usefulness (r=0.303; p <0.001), in addition to the correlations with other variables mentioned before. Thus, employees who have demonstrated a greater ability to develop their learning independently also tend to be those who have a greater understanding of the potential of SOST's advanced features.

A single correlation with statistical significance and strong intensity was obtained. This occurred positively between the variables social influence and principal support (r=0.588; p <0.001). In this case, respondents who believe that there are higher levels of social influence for the use of advanced features of the SOST also tend to show a high level of support for this process from top management. It should also be noted that the variable discrepancy did not obtain moderate or strong correlation associations with other study variables.

Table 25. *Pearson Correlations and Cronbach's Alpha.*

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Performance Expectancy	4.37	.61	(.869) [a]										
2. Effort Expectancy	3.68	.63	**.408****	(.823) [a]									
3. Social Influence	3.47	.71	**.335****	**.363****	(.824) [a]								
4. Facilitating Conditions	3.42	.72	-.026	**.331****	**.401****	(.545) [a]							
5. Intention to Use	3.96	.79	**.448****	**.367****	**.373****	.165*	(.955) [a]						
6. Discrepancy	3.72	.80	**.219****	.042	-.057	**-.254****	.047	(.896) [a]					
7. Principal Support	3.63	.73	.161	.203*	**.588****	**.480****	**.265****	-.155	(.816) [a]				
8. Personal Innovativeness	3.60	.76	**.322****	**.432****	**.266****	.147	**.426****	.210*	.201*	(.707) [a]			
9. Self-regulated Learning	3.69	.63	.209*	**.315****	.211*	.184*	.061	.059	**.220****	**.313****	(.834) [a]		
10. Specific Tech. Complex Task Self-efficacy	2.01	.76	**-.386****	-.092	.095	.152	**-.221****	**-.280****	.034	-.128	-.040	(.744) [a]	
11. Awareness of the Potential Usefulness	2.21	.73	.054	**.318****	**.328****	**.337****	**.305****	-.127	**.227****	**.388****	**.303****	.170*	(.886) [a]

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

[a] Cronbach's Alpha

Harman's single factor test: 24.43% of total variance explained.

A weak but statistically significant positive correlation was recorded with performance expectancy and discrepancy ($r=0.219$; $p<0.010$). This indicates that those who recognize that a certain task is not being performed efficiently and can benefit from the advanced features of the SOST also perceive some expectation of performance improvement with the use of these technologies. On the other hand, a weak but statistically significant negative correlation was recorded with discrepancy and facilitating conditions ($r=-0.254$; $p<0.001$). In this case, respondents tend to consider that if the sense of discrepancy (the acknowledgment that the process has room for improvement and should be enhanced) increases, there is a perception of lower support conditions for the execution of tasks with the SOST's advanced features.

5.8.4. Confirmatory Factor Analysis

Confirmatory factor analyses were performed using the statistical program AMOS to evaluate the factorial solutions resulting from exploratory factor analysis. For this analysis, the database was checked to ensure that there were no null responses – one of the criteria for using AMOS.

Several indicators were used to test the model fit. The chi-square test ($\chi 2$) was used to evaluate the fit of the factorial models, and it was considered that a $\chi 2/df$ value less than 2 corresponded to a good fit and less than 3 corresponded to a reasonable fit (Kline, 2005). Values above 0.90 (Hair et al., 2010) were also considered for the Comparative Fit Index (CFI), above 0.90 (Hu & Bentler, 1999) for the Incremental Fit Index (IFI), and a value less than 0.08 (Hair et al., 2010) for the Root Mean Square Error of Approximation (RMSEA), which measures the model's fit to the population and can be used in hypothesis testing analysis.

Confirmatory factor analyses were performed for all of the eleven scales used in this study. Figure 6 presents the final model after excluding three variables: facilitating conditions, self-regulated learning, and specific technology complex task self-efficacy. The reason for the exclusion of these variables is that they negatively affected the model fit, and their inclusion in the model did not allow for reaching the minimum reference values for the indicators used in the test.

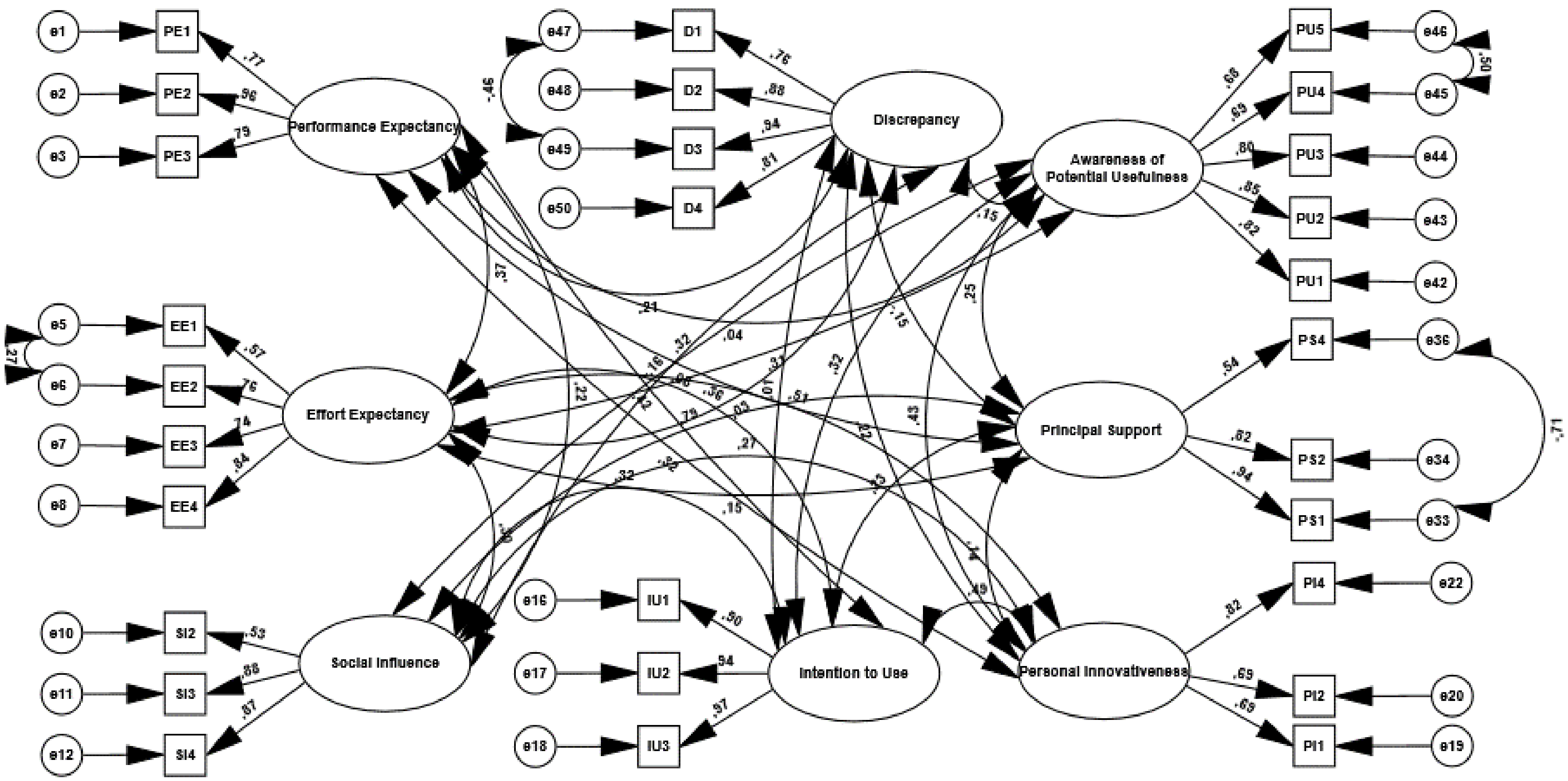

Figure 6. *Confirmatory Factor Analysis final model.*

Even after excluding the variables mentioned above, the fit indices in the initial model were not adequate. Therefore, modifications were made by considering the modification indices to establish correlations between errors. After this modification, the fit levels improved significantly, but the estimated weight between some latent variables and observed variables slightly decreased. According to Hair et al. (2010), the standardized value of loadings should be at least 0.5 and ideally 0.7 or higher. Thus, the loadings were below 0.5 for the estimated weight between the latent variable and one of the observed variables of performance expectancy (If I use SOST's advanced features, I will increase my chances of getting a raise), the estimated weight between the latent variable and one of the observed variables of principal support (The top leaders in this organization are actively promoting the effective use of SOST's advanced features), the estimated weight between the latent variable and one of the observed variables of personal innovativeness (In general, I am hesitant to try out new information technologies), and the estimated weight between the latent variable and one of the observed variables of social influence (People who influence my behavior think that I should use SOST's advanced features). All other estimated weights were equal to or greater than 0.5 (see Figure 7). Therefore, all these items that presented values below the reference were excluded from the model.

After removing the items that obtained low loadings and after applying the modification indices, with the establishment of several correlations between errors, the fit indices values obtained in the final model were satisfactory (Table 26), so the final model meets the prerequisites in all test indices, since the $\chi2/df$ of 1.601; $p<0.001$ is less than 2, the CFI of 0.925 and IFI of 0.926 are above the threshold of 0.90, and the RMSEA is 0.065, below the limit of 0.080. Thus, it was considered that there is a good fit for the final model.

Table 26. *Model fit indices for the Confirmatory Factor Analysis.*

Indices	Initial model	Final model
Chi-square ($\chi2$)	1001.453	509.042
$\chi2/df$	2.297	1.601
CFI	0.809	0.925
IFI	0.813	0.926
RMSEA	0.096	0.065

5.8.5. Structural Equation Model

After verifying the fit of the final model, structural equation analysis was performed to test the study hypotheses and confirm the relationships between variables. Some variables were excluded from the initial theoretical model due to confirmatory factor analysis not resulting in adequate fit values or not showing adequate fit in the final model. Thus, the results indicated that the facilitating conditions, self-regulated learning, and specific technology complex task self-efficacy variables should be excluded from the model. Thus, hypotheses H5, H6, H7, H8, H10, and H14 were excluded from the theoretical model and were not tested in the structural equation model. Therefore, a final model includes the remaining variables, namely four original variables from the UTAUT model (performance expectancy, effort expectancy, social influence, and intention to use), three variables obtained in the literature review and confirmed in the exploratory study (discrepancy, personal innovativeness, and principal support), and a new variable (awareness of potential usefulness) that also emerged from the exploratory study (Figure 8).

To confirm the defined hypotheses, the values of the standardized regression coefficients (β) presented in Table 27 were considered. The data indicate a positive and statistically significant relationship between awareness of potential usefulness and intention to use ($\beta=0.23$; $p<0.001$) with a contribution of 30% to the explanation of intention to use, confirming hypothesis H1. Thus, the results indicate that knowledge of the potential usefulness of advanced features increases employees' intention to use them.

The relationship between discrepancy and performance expectancy was not significant, therefore H2 is not confirmed.

The obtained results indicate that personal innovativeness has a positive and statistically significant relationship with performance expectancy ($\beta=0.34$; $p<0.001$), contributing to explaining 15% of the latter. A profile of personal innovativeness means a greater willingness to change and experiment with new technologies and, in this case, advanced features. Therefore, this predisposition to innovate also contributes to higher expectations regarding the performance that may be achieved through the use of technologies. This relationship demonstrates that employees' level of personal innovativeness has an impact on the perception of the results that are expected through the use of advanced features of SOST, confirming hypothesis H3. Personal innovativeness also has a positive and statistically significant impact on effort expectancy ($\beta=0.52$; $p<0.001$). The results indicate that personal innovativeness contributes to explaining 27% of the effort expectancy. Thus, the results indicate that employees with a greater predisposition to innovate recognize the need to invest more effort in using advanced features, confirming hypothesis H4. Verification of this hypothesis leads us to the conclusion that this experimentation increases awareness of the effort that employees consider necessary to efficiently execute advanced features.

The variable principal support has a positive and statistically significant relationship with social influence (β=0.80; p<0.001). This relationship contributes to explaining 65% of social influence. Therefore, the support from top management regarding the use of advanced features of the SOST increases social influence among other employees towards the use of these tools. Thus, this relationship confirms hypothesis H9. In this sense, it can be said that the exercise of influence among colleagues, family members, and other interlocutors, towards the use of advanced features, when promoted by top management, functions as an additional stimulus for the use of these tools. This means that there is social mobilization towards the use of these types of features when top managers show support for their use.

Table 27. *Standardized regression coefficients for the variables in study.*

	Hypothesized path	**β**	t-value	p	Decision
H1	APU → IU	0.230	2.674	p<0.01**	Accepted
H2	D → PE	0.139	1.570	p=0.116 (ns)	Rejected
H3	PI → PE	0.335	3.341	p<0.001***	Accepted
H4	PI → EE	0.523	5.096	p<0.001***	Accepted
H5	SL → PE	–	–	–	–
H6	SL → EE	–	–	–	–
H7 H8	SC-SE → PE SC-SE → EE	–	–	–	–
H9	PS → SI	0.805	5.652	p<0.001***	Accepted
H10	PS → FC	–	–	–	–
H11	PE → IU	0.359	4.380	p<0.001***	Accepted
H12	EE → IU	0.140	1.656	p=0.098 (ns)	Rejected
H13	SI → IU	0.146	1.822	p=0.068 (ns)	Rejected
H14	FC → IU	–	–	–	-

Awareness of the potential usefulness (APU), Intention to use (IU), Discrepancy (D), Performance expectancy (PE), Personal innovativeness (PI), Effort expectancy (EE), Self-regulated learning (SL), Specific technology complex task self-efficacy (SC-SE), Principal support (PS), Facilitating conditions (FC)

β - standardized regression coefficient values

p – p-value; *** p<0.001; ** p<0.05; ns – non significant

– Hypotheses that were not tested in the structural equation model due to the inadequacy observed in the confirmatory analysis.

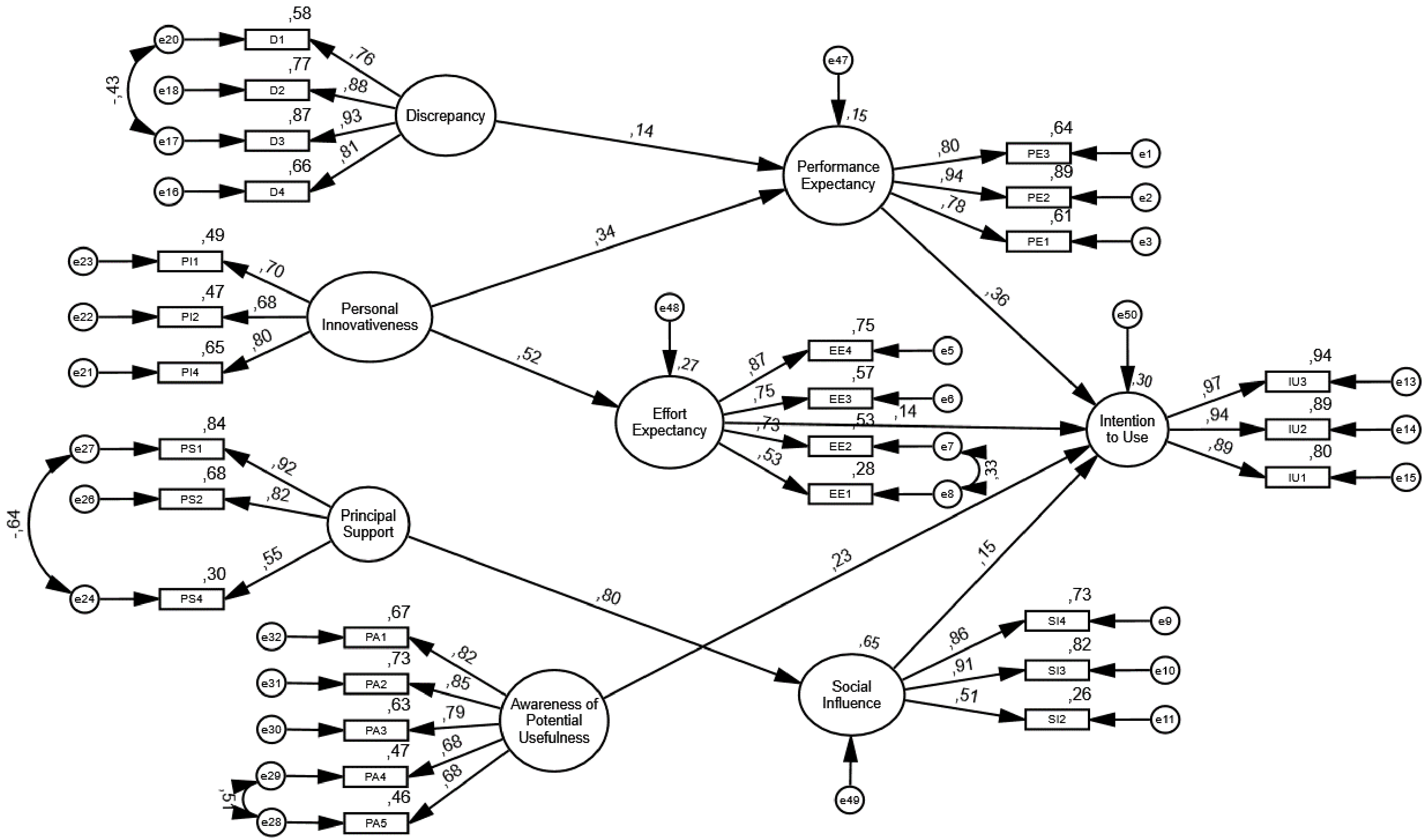

Figure 7. *Structural equation model for the intention to use variable.*

There was a positive and statistically significant relationship between the variables performance expectancy and intention to use ($\beta=0.36$; $p<0.001$), with a contribution of 30% to the explanation of the latter variable, confirming hypothesis H11. These data indicate that the expectation of performance improvement with the use of advanced features of SOST by employees influences their intention to use, as predicted in the UTAUT model. Thus, the recognition that it is possible to improve performance through the use of advanced features of SOST influences their intention to use, whether for the first time or continuing to use.

Equally positive was the relationship obtained between the variables effort expectancy and intention to use ($\beta=0.14$; $p=0.098$). However, since the results are statistically non-significant, hypothesis H12 cannot be confirmed.

The remaining relationships tested in the structural equation model did not show statistically significant data, including the relationship between discrepancy and performance expectancy (hypothesis H2 was not confirmed). Therefore, despite the UTAUT model showing high consistency in various studies, in this research, it did not happen concerning the variables facilitating conditions and effort expectancy, since the former showed problems since the exploratory factorial analysis, and the latter did not obtain statistically significant values in its relationship with intention to use in the structural equation model.

6. Discussion

Technology acceptance and usage models, particularly the UTAUT model (Venkatesh et al., 2003, 2012), have been applied to a variety of technologies and study contexts (Tamilmani et al., 2021). However, these studies have primarily focused on the overall usage of technologies and have not considered specific functionalities within these technologies that may have an impact on efficiency. This is the case with many advanced features found in feature-rich computer applications, such as SOST. In these studies (Tamilmani et al., 2021), factors determining technology adoption have been identified, but the causes of inefficient usage have not been adequately explored (Bhavnani et al., 2000; Bhavnani & John, 1996; Cockburn et al., 2014; Doane et al., 1990; Nilsen et al., 1993).

According to Gupta and Bostrom (2019), certain computer applications should be studied due to their specific characteristics, which determine the specific level of skills and individual effectiveness required, as is the case with feature-rich applications. Their high complexity raises questions that are not solely related to the adoption of the tool, but also to the features used within the tool itself. Therefore, this research sought to explore additional explanations that complement the UTAUT model regarding the usage of specific (more complex) features in computer applications.

The UTAUT model is widely recognized as a significant framework in the field of technology acceptance and use. It seeks to integrate various theories from information systems, psychology, and sociology to provide a more comprehensive understanding (Venkatesh et al., 2003). The main constructs of the model include performance expectancy, effort expectancy, social influence, facilitating conditions, use behavior, and behavioral intention to use. Since its inception, it has been extensively utilized in research, with over 6,000 citations and application, integration, or extension in 147 articles (Tamilmani et al., 2021). Tamilmani et al. (2021) view the model as a theoretical lens for comprehending issues related to technology adoption when combined with other theories or through the inclusion of external variables. Our research sought to identify such external variables to extend the theory and enhance its predictability within the specific context of complex knowledge and technology (Gupta & Bostrom, 2019), where the utilization of advanced features in feature-rich software is relevant.

We conducted a qualitative study with the objective of exploring the relevance of constructs obtained from the literature in the fields of organizational change, technology acceptance and adoption, resistance to change, and computer self-efficacy, as well as identifying other concepts that could potentially integrate the UTAUT theoretical model. Interviews were conducted with 43 employees from the four sampled companies, following a non-probability convenience sampling (Yin, 1994) and judgement sampling (Taherdoost, 2016) methods, and the results suggested several of the previously identified causes of feature-rich software underutilization in the literature. The vast majority of the employees participating in the study use SOST and its advanced features in their professional activities. However, few employees reported using the most advanced features (e.g., Macros and VBA), such as found in previous studies (Bhavnani et al., 2000; Bhavnani & John, 1996; Cockburn et al., 2014; Doane et al., 1990; Nilsen et al., 1993). Some of the interviewees also admitted to lacking the ability to learn and use certain advanced features. This situation may be attributed to the lack of skills expressed by many of the participants, which is confirmed by Gupta and Bostrom (2019) as they consider these applications and the tasks involved to be complex, thereby requiring specific software and complex task self-efficacy (SC-SE).

An important conclusion of the qualitative study is the verification that almost all interviewees admitted to not having a clear understanding of the potential of the advanced features in SOST for efficiently solving administrative task-related problems. While employees acknowledged the existence of these advanced features, they struggled to identify when and how to use them in specific situations, despite recognizing an opportunity for improvement in their performance, which indicates a discrepancy as proposed by Armenakis et al. (1999). Therefore, it is not sufficient to know the existence of advanced features or possess the necessary self-efficacy to apply them, but also to be able to identify the appropriate advanced feature(s) for solving a specific problem. This situation may be related to the lack of strategic knowledge, which can be defined as the ability to organize problem-solving approaches in a particular domain (Bhavnani & John, 1996), which is acquired through experience and the capacity to consider alternative strategies (Garikano et al., 2019). Without strategic knowledge, employees may not know which advanced features are best suited to solve their problem and may not know how to apply them effectively for that specific purpose. For example, resolving a particular problem may require the utilization of multiple advanced features in SOST. Therefore, the lack of clear awareness regarding the potential usefulness of the advanced features in SOST for efficiently resolving administrative task-related problems is a significant result obtained in the qualitative study and was introduced in the quantitative study as a variable called awareness of the potential usefulness, which will be discussed later on.

The results of the qualitative study also highlighted other concepts that align with the literature. One of them relates to personal innovativeness (Agarwal & Prasad, 1998), which several employees mentioned as an individual characteristic that encourages them to experiment with advanced features. Another relevant concept is self-regulated learning (Zimmerman, 1989), which the interviewees deemed important for autonomously developing skills in advanced features, even when specific training is provided in the area. The participants also emphasized the significance of top management support to the utilization of advanced features in SOST, which aligns with the views of several authors (Armenakis et al., 1999; Armenakis & Harris, 2009; Dong et al., 2009). However, many employees argued that this support is not formal but implicit, which may have a limited impact on the use of SOST's advanced features and their effective implementation within organizations.

The qualitative study also provided evidence of the relevance of variables from the UTAUT model (Venkatesh et al., 2003). Regarding the variable performance expectancy, the majority of employees acknowledged that the advanced features of SOST allow for increased efficiency in executing administrative tasks. However, the high complexity of these features was identified as a cause for difficulty in their utilization, which may require more effort to master the tool. In the UTAUT model, this situation can be associated with the variable of effort expectancy. The interviews also revealed that peer encouragement plays a significant role in influencing the use of advanced features, which is consistent with the concept of social influence (Venkatesh et al., 2003) and the idea that colleagues' opinions have a positive impact on the perceived benefits of using a new system (Shirish & Batuekueno, 2021). Lastly, the participants recognized the importance of support structures such as assistance from colleagues, and the provision of equipment and software by top management, which aligns with the concept of facilitating conditions in the UTAUT model.

In general, the qualitative study confirmed the relevance of various constructs previously identified in the literature as causes for the underutilization of advanced features in feature-rich software, specifically in the case of SOST. Additionally, it revealed a new construct not found in the literature, which can be referred to as awareness of the potential usefulness. These variables were used in the quantitative study, and their results are discussed next.

The variable awareness of the potential usefulness, which emerged from the exploratory study, was tested in our quantitative study by including it in the UTAUT base model. This variable represents the level of comprehension concerning both the purpose and functionalities of a specific technology, along with the acknowledgment of its value for effectively completing a particular task. The results revealed a positive and statistically significant relationship between this variable and the variable intention to use. Therefore, knowledge of the potential of advanced features of SOST for solving administrative task related problems increases the employee's intention to use those features. This new variable does not measure the level of skills of the employee regarding the use of advanced features. These are two distinct concepts. This means that it is not only the self-efficacy in using advanced features in SOST that is necessary for efficient task execution. It is also necessary to know that a specific advanced feature has the potential to solve a particular problem. Only then will the user potentially seek to develop the necessary skills to operate that advanced feature. If they are unaware of its potential, they may not use it because they do not perceive any benefit in its utilization. No concepts were found in the literature that presented this differentiation.

The quantitative study also revealed a positive and statistically significant relationship between personal innovativeness and effort expectancy. Specifically, the results show that employees with a higher degree of personal innovativeness perceive the advanced features of SOST as easier to use. This finding is consistent with the literature that links the concept of personal innovativeness with effort expectancy (Twum et al., 2022; Van Raaij & Schepers, 2008). This positive relationship was also found with the concept of perceived ease of use (Amoroso & Lim, 2015; Fagan et al., 2012; Lim et al., 2020; Lu et al., 2005; Zarmpou et al., 2012), which originates from the TAM model (Davis, 1989). Perceived ease of use represents the extent to which users perceive a system, product, or technology as easy to use. Although this variable was not included in the theoretical model, it is equivalent to the effort expectancy variable in the UTAUT model.

Another result from the hypothesis testing reveals a positive and significant relationship between principal support and social influence. This means that the support provided by top management and supervisors to users of advanced features in SOST increases the social influence that employees exert on others in terms of utilizing these advanced features. Karaca et al. (2013) state that principal support has a significant impact on colleague support. In this case, colleague support represents the support given by coworkers for the use of technologies, which is not the same as social influence. However, this construct helps understand the social dimension in the process of influencing other employees.

Performance expectancy and intention to use are variables from the UTAUT model that also showed a positive relationship in this study. This relationship means that employees who perceive an expectation of improved efficiency through the use of advanced features in SOST demonstrate a greater intention to use these features. This finding is consistent with the results obtained by the original authors in their various studies (Venkatesh et al., 2003, 2012, 2016), as well as a significant number of studies by other authors who applied, integrated, or expanded the original UTAUT model (Tamilmani et al., 2021). However, the results of this investigation did not confirm the causal relationships between the variables effort expectancy and intention to use, and between social influence and intention to use, in the UTAUT model. Similarly, the relationship between facilitating conditions and intention to use was not confirmed.

Nevertheless, in the original UTAUT model, the relationship of facilitating conditions was established directly with the use behavior variable, which represents the actual use of the technology in question, and not with the variable intention to use, which was the relationship tested in the current study.

7. Conclusions and Future Perspectives

The main findings of the study are highlighted in this final chapter, namely those related to the identification of the causes of the underutilization of SOST's advanced features.

Afterwards, it presents the implications of the study's results for organizations, their managers and employees, the main limitations of the study, and some suggestions for future research.

7.1. Key Findings

In response to research question 1 (see chapter 3, section 3.1), the results confirm there is an underutilization of SOST's advanced features in the sampled organizations. Many interviewees acknowledged there is room for improvement in the use of these features, in the qualitative study, and only a minority of participants confirmed they use the most advanced features (Macros and VBA), as verified in the quantitative study.

One of the possible causes of underutilization of the advanced features of SOST could be related to low user skills levels, as these features are considered complex and difficult to use (Garikano et al., 2019). In fact, the qualitative study conducted pointed out this possibility, with company employees indicating difficulties in using these tools. Thus, the intention was to test the relationship of the specific technology complex task self-efficacy (SC-SE) variable (Hollenbeck & Brief, 1987) with other variables in the UTAUT model. This variable was specifically created to measure individual skills in performing complex tasks with the support of specialized technologies, such as feature-rich applications. However, since satisfactory values were not obtained in the confirmatory factor analysis, this relationship could not be confirmed in the quantitative study and was not included in the final model.

However, a positive causal relationship was confirmed between the variable awareness of the potential usefulness and the variable intention to use in the UTAUT model, in response to research questions 3 (reasons for the features underutilization) and 4 (impact in the UTAUT model). This new variable, which emerged from the exploratory study, and has not been explored within the scope of technology acceptance and use (research question 2), represents the degree of knowledge regarding the potential of the advanced features of SOST. Before an employee becomes interested in developing their skills in a particular advanced feature, it makes sense for them first to be able to identify its potential for performing their administrative tasks. In this research, this concept of awareness of the potential usefulness proved to be a precursor to the intention to use the advanced features of SOST. This was not the case with the variable measuring the skills for their execution (SC-SE), as might have been expected (Gupta & Bostrom, 2019). This finding is relevant because many companies ask employees to indicate their skills development needs or conduct assessments to identify skills gaps without first determining which advanced features are truly useful in addressing their specific task needs.

Another significant result of this research confirmed the importance of the concept of personal innovativeness (Agarwal & Prasad, 1998) and its influence on the UTAUT model (research questions 3 and 4). Thus, it was possible to establish the causal relationship between this variable and the performance expectancy and effort expectancy variables. Consequently, employees with more open profiles towards innovation tend to perceive a perspective of achieving better results through the use of the advanced features of SOST, as well as having a clearer understanding of the effort required for their utilization.

The concept of principal support (Armenakis et al., 2007), which originated from the field of organizational change, represents in this research the support provided by company leadership and middle management for the utilization of the advanced features of SOST. Its inclusion in the UTAUT model confirmed an important positive relationship with social influence (research questions 3 and 4). Therefore, the involvement of top managers and middle managers in change processes aimed at using the advanced features of SOST has a significant impact on employees through the influence they exert on each other and within the company.

In conclusion, the extension of the UTAUT model with the aforementioned variables demonstrated its viability, indicating that the context of feature-rich applications, to which category SOST belong, has specific characteristics due to its complexity, both in terms of the applications themselves and the tasks they solve. These particularities emphasized the importance of a new concept – the awareness of the potential usefulness variable.

7.2. Implications for Practice

The results obtained in this research may affect organizations in three different ways: (i) as employees, who are expected to perform more efficiently; (ii) as managers, who need to motivate, support, train, and monitor efficient employees; (iii) and the organization as a whole, that will be more efficient and productive if the advanced features of SOST are used regularly to perform administrative tasks in a faster way and less prone to error.

The awareness of the potential usefulness of the advanced features of SOST, identified in our study, is crucial for employees to choose which features are relevant to their work and to develop their skills accordingly. Without this awareness, employees may spend time and effort learning features that are not useful to them, or they may not learn how to use the most suitable advanced features for their roles and tasks. In the first scenario, they would experience a loss of time, and in the second scenario, a missed opportunity for improving administrative efficiency. In addition to that, it has been found in the literature that technical knowledge alone is not sufficient for performing complex tasks using a specific feature. Strategic knowledge, which involves the ability to logically relate different concepts (features) and consider alternative strategies, is important (Garikano et al., 2019). The fundamental problem is that, according to the same authors, this strategic knowledge is rarely addressed in professional training. Therefore, clear identification of the relevant advanced features for an employee considering the execution of their specific tasks is crucial for professional training plans to meet the employees' needs.

It is also necessary to develop strategic knowledge within those professional training programs. To achieve this, training needs assessments should not solely rely on the opinions of employees, as they may not be aware of the potential of advanced features and their suitability for their tasks, as identified in our research. Instead, a prior analysis of individual tasks by someone knowledgeable about the potential of advanced features and capable of identifying suitable functionalities is necessary. Only after this diagnosis it will be possible to identify the advanced features of the SOST for which each employee should acquire skills. This implies that human resources or training managers should be able to align with these needs in order to organize adequate training programs.

In addition to identifying the training content, it would also be necessary to modify the training methodologies. In this case, professional training sessions should specifically address each employee's tasks and problems, rather than teaching advanced features in a more general context. Only through this approach can employees develop the necessary strategic knowledge to solve the problems identified in training and enhance their problem-solving abilities for the future. Changing these practices would have significant benefits for employees as they would easily identify the potential for efficiency improvement, motivating them to seek such solutions and use the advanced features of SOST more frequently. These practices should be integrated in organizational policies. This process would enable more effective human resource management, resulting in improved organizational efficiency and productivity.

7.3. Limitations of the Study

During the development of this investigation, certain constraints potentially introduced biases to the findings. The initial limitation pertains to the sampling method employed. The use of judgement sampling and convenience sampling, which are non-probabilistic in nature, restricted the ability to generalize the results in the quantitative study, although it cannot be considered a limitation of the qualitative study since the objective of this study is not to generalize results.

The inclusion of a greater number of companies in the sample would have been beneficial, as it could have increased the sample size in the quantitative analysis. While the sample used enabled a robust statistical examination, a larger and more diverse sample could have yielded more reliable outcomes.

Another limitation of the study was not to consider the impact of strategic knowledge. This construct is rarely considered in training (Garikano et al., 2019), and has been pointed as the reason why users did not change their suboptimal strategies (Bhavnani & John, 1996), which may explain as well the underutilization of SOST's advanced features. Despite the importance of the strategic knowledge construct, this was not studied in this research since it demands a different design to assess users' skills, which were not the purpose of the instruments used.

Additionally, the quantitative study evaluated the variable awareness of the potential usefulness, as identified in the qualitative research. This evaluation was conducted through employees' perceptions of this concept. Given that certain employees might hold perceptions that diverge from their actual level of understanding about the potential of these advanced features, their questionnaire responses could lack accuracy.

Lastly, in the qualitative study, there were indications of the potential influence of organizational culture on the utilization of advanced features of SOST. This was not tested in the quantitative study.

7.4. Recommendations for Future Research

Considering the specificities of feature-rich applications, which may require changes or adaptations to theories of technology adoption and use, further studies are needed to expand knowledge on the subject. The present study has revealed some opportunities for future research, which are outlined below.

The judgement and convenience sampling methods applied in the quantitative study, have limitations in terms of generalizability of the results. Therefore, it would be important to conduct further studies on this type of software applications and the causes of their underutilization, in order to obtain results that can be generalized to the population. Additionally, these studies could evaluate the theoretical model proposed in our research and explore other potentially relevant variables.

This research focused only on medium and large companies. It would be interesting to investigate whether the same results would be obtained in micro and small companies, as well as in nonprofit organizations, both public and private.

Moderator variables were not used in this study. It may be relevant to examine the impact of moderator variables such as age, gender, and experience on the proposed theoretical model. For example, the qualitative study highlighted the potential increase in the unwillingness to use advanced features with age. Understanding how these variables interact with the factors influencing the underutilization of feature-rich applications could provide valuable insights into the nuances of technology adoption and use within organizations. Further research should consider incorporating moderator variables to gain a more comprehensive understanding of the factors influencing underutilization and their contextual influences.

The variable awareness of the potential usefulness was tested in the quantitative study based on employees' perceptions of this construct. As some employees may have a perception that does not align with their actual level of knowledge about the potential of these advanced features, alternative approaches to measuring this situation could be important. Instead of using a questionnaire, as done in this research, an experiment could be conducted where users are presented with specific problems and tasks and challenged to define a task execution model using advanced features in a controlled environment. This would allow for a more accurate measurement of knowledge about the potential of these advanced features.

Additionally, considering the importance of strategic knowledge and its implications for training plan development (Garikano et al., 2019), studying this variable would also require a different approach. Since strategic knowledge encompasses an understanding of the company, the problem to be solved, the tools, and the specific task, it would be useful to design a study that applies an experiment. In a controlled environment, participants could be presented with a challenge to perform a task using the advanced features of these tools. Resolving this challenge would require strategic knowledge, enabling the measurement of this variable and its impact on a theoretical model.

Lastly, since there were indications of the potential influence of organizational culture on the utilization of advanced features of SOST in the qualitative study, future research could be conducted to further explore this relationship.

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Appendices

Appendix 1 – Description of selected SOST's advanced features

Advanced features	Description and use
Formulas and Functions (MS Excel)	Formulas are used to do mathematical calculations, and Functions are premade formulas (W3Schools, 2022). With these features, calculations can be automated in a workbook. This means that source data can change, but the results will always be calculated by the formulas in place.
PivotTables and Charts (MS Excel)	PivotTables are tools to calculate, summarize, and analyze large sets of data (Microsoft, 2022a). These are useful to compare data and detect patterns and trends. It is a relevant feature for performing data analysis.
Macros (MS Excel, MS Word, MS Outlook, and MS PowerPoint)	Macros are a set of actions that can be run as many times as needed (Microsoft, 2022e). They can be recorded to automate tasks that are done repeatedly, exempting the user from the need of executing all the steps of the task manually.
VBA (MS Excel, MS Word, MS Outlook, and MS PowerPoint)	Visual Basic for Applications (VBA) is a programming language that can be used to extend Office applications (Microsoft, 2022b). This is particularly useful to automate repetitive tasks or to automate calculations. It is the Macros' programming language. It can be used when recorded Macros are not enough to solve an automation problem.
Mail Merge (MS Word)	Mail Merge is a tool that can use an external source (e.g., Excel) with data that is automatically loaded to create a batch of documents, such as a large number of contracts and letters, or for bulk email (Microsoft, 2022g).
Message Rules (MS Outlook)	Message rules can be applied in Outlook to move, flag, and respond to email messages automatically (Microsoft, 2022f). These rules can automate routine tasks that are performed daily to email messages.
Templates (MS Outlook, and MS PowerPoint)	Templates are structured formatting styles applied to a document that can be reused in any new document file (Microsoft Corporation, 2022c). This can save time in the process of structuring and formatting new documents.
Power Query (MS Excel)	Power Query is a Microsoft tool that is used to connect, extract, transform and load data from an extensive list of data sources (Microsoft, 2022c). It is not exclusive to Excel, but it is commonly used in this SOST to load data from other Excel files or sources. It can automate, for example, the data import process from an ERP system.
Power BI (MS Excel)	Power BI is a business intelligence tool to create rich and interactive reports with visual analytics (Microsoft, 2022d). These reports can be formatted as dashboards that automate data updates over time (e.g., monthly reports).

Appendix 2 – Script of the interview with employees

This interview aims to obtain your perception about your individual use or non-use of the advanced features of the standard office software tools (SOST), such as the MS Office tools (MS Word, MS Excel, MS Outlook, MS PowerPoint, etc.) or programs of agenda management, electronic mail management and other tools for administrative tasks execution. Advanced features are those that allow a greater degree of automation of the task or a more efficient execution, such as formulas, Macros, VBA, among others.

The information collected is intended to be analyzed within the scope of a research integrated in a PhD in Business Administration, carried out at the University of Minho, under the supervision of Professors Íris Barbosa and Carla Freire. For this purpose, we ask for permission to record the interview, ensuring that the content will only be accessed by the research team involved in the project and only for the aforementioned purposes.

We thank you in advance for your cooperation in this study and we guarantee the total confidentiality of this interview.

Interview questions
Name, gender, and age Company Position Education Total number of years of work Total number of years of work in this company

1. Do you use the SOST in your work?

   Prompt: For which purposes? What are the benefits of using the SOST?

2. Do you use the advanced features of SOST in you work? [If yes, ask for examples; if there is no understanding of what SOST is, give some examples – formulas, Macros, VBA, among others].

   Prompt: For which purposes? What are the benefits of that use?
   Prompt: Why don't you use the advanced features of the SOST?
   Prompt: Why don't you use other advanced features of the SOST?
   Prompt: Can you detail the reasons for not using the SOST's advanced features?

3. Dou you consider that the SOST's advanced features help you (or may help you) to execute your tasks efficiently? To what extent?

   Prompt: How do you assess the potential of those advanced features?

Interview questions

4. Do you use the SOST in your work?

   Prompt: For which purposes? What are the benefits of using the SOST?

5. Do you use the advanced features of SOST in your work? [If yes, ask for examples; if there is no understanding of what SOST is, give some examples – formulas, Macros, VBA, among others].

   Prompt: For which purposes? What are the benefits of that use?
   Prompt: Why don't you use the advanced features of the SOST?
   Prompt: Why don't you use other advanced features of the SOST?
   Prompt: Can you detail the reasons for not using the SOST's advanced features?

6. Do you consider that the SOST's advanced features help you (or may help you) to execute your tasks efficiently? To what extent?

   Prompt: How do you assess the potential of those advanced features?

7. In your company, what are the factors that favor the adoption and use of the SOST's advanced features?

   Prompt: Why are those factors facilitating the adoption and use of the SOST's advanced features?

8. In your company, what are the factors that make it more difficult to adopt and use the advanced features of the SOST?

   Prompt: Why are those factors making it more difficult to adopt and use the SOST's advanced features?

9. How does the top management deal with the use of the SOST's advanced features?

   Prompt: Are they in favor, against or neutral?
   Prompt: Why?

10. Does your company's organizational culture influence your use or non-use of SOST's advanced features?

    Prompt: To what extent?

11. Does your organization define policies and practices that encourage (or discourage) the use of SOST's advanced features?

    Prompt: Can you detail?
    Prompt: Why?
    Prompt: To what extent?

12. How do the learning or training processes in your company facilitate or hinder the adoption and use of the advanced features of SOST?

13. Do you consider that your use of the SOST's advanced features is dependent on the support given by third parties?

Interview questions

Prompt: Why?

Prompt: To what extent?

14. Do your co-workers influence your use or non-use of SOST's advanced features?

    Prompt: To what extent?

15. Do you identify other factors or people that influence your use or non-use of SOST's advanced features?

    Prompt: Which factors?

    Prompt: Who?

    Prompt: To what extent?

16. Do you consider that you possess the necessary skills and knowledge to use the SOST's advanced features in your work?

    Prompt: What skills are necessary? Why?

17. In your opinion, do your personality and individual traits influence the use or non-use of SOST's advanced features?

    Prompt: To what extent?

18. Would you like to add something about the use or non-use of the SOST's advanced features?

Appendix 3 – Informed consent declaration

Paulo Nuno Barbosa Novo da Silva Vaz, a student pursuing a Doctorate in Management at the University of Minho, is currently engaged in a research project. The study, led by Professor Íris Barbosa and co-supervised by Professor Carla Freire, revolves around the topic of "Explaining the ineffective utilization of standard office software tools".

The purpose of this interview is to collect data solely for scientific research purposes, adhering to all ethical principles, including confidentiality and anonymity.

Your participation is completely voluntary, and you have the right to withdraw at any time without any negative consequences.

Recording the interview is essential for data analysis, so we kindly request your permission to record it.

I, ____, hereby declare that I authorize the recording of the interview and the utilization of the data collected for the aforementioned research.

Date: __/__/___

Signature: ____

Appendix 4 – Employee questionnaire

INTRODUCTION

Dear employee,

The present questionnaire aims to gather data on employees' perceptions regarding the use of advanced features of standard office software tools (SOST). The collected data will be part of a research study leading to the development of a Ph.D. thesis in Management at the University of Minho, under the guidance of Professor Dr. Íris Barbosa and co-guidance of Professor Dr. Carla Freire.

The term SOST refers to traditional office productivity applications commonly found in most companies, including spreadsheet software (e.g., *Microsoft Excel*), word processors (e.g., *Microsoft Word*), email applications (e.g., *Microsoft Outlook*), presentation software (e.g., *Microsoft PowerPoint*), among others.

The advanced features of SOST are those that require a higher level of knowledge and skills to use. Among the numerous advanced features available in SOST, the following are notable: advanced functions and formulas, Macros, VBA (Visual Basic for Applications), template creation, form creation, email rules, mail merge fields, among others.

For each question in the questionnaire, you should select an option on a scale from 1 to 5, with the following assigned meanings: 1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

There is complete assurance of anonymity and confidentiality in the statistical treatment of the data. Before filling out the questionnaire, we request authorization through informed consent. Therefore, please indicate whether you agree with the following statement by clicking on the checkbox:

☐ I declare that I am aware of the objectives of the study, the assurance of anonymity and confidentiality, and I authorize the researcher to use the information for his academic and scientific work.

Researcher's contact information: tel. ——— / id9051@alunos.uminho.pt

QUESTIONAIRE

Part I

A. The following statements relate to your level of knowledge of advanced features of SOST and their potential for improving task efficiency. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

1. I can identify all the advanced features of SOST.
2. I know the utility of any of the advanced features of SOST.
3. I am able to identify the potential of any advanced feature of SOST to improve task efficiency.
4. I know the most efficient advanced feature of SOST for each task I need to perform.
5. I use the most efficient advanced features of SOST for each task I need to perform.

B. The following statements refer to your perceptions regarding the existence of opportunities to improve task efficiency in your company through the use of advanced features of SOST. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

6. In this organization, we need to change the way we use the advanced features of SOST.
7. In this organization, we need to improve how we operate with the advanced features of SOST.
8. In this organization, we need to improve our efficiency by changing how we operate with the advanced features of SOST.
9. A change in how we use the advanced features of SOST is necessary to improve our operations.

C. The following statements correspond to your perceptions regarding the support provided by top management for the use of advanced features of SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

10. Top management actively promotes the effective use of advanced features of SOST in this organization.
11. Top management supports an organizational change that promotes the effective use of advanced features of SOST.
12. My direct supervisor is in favor of an organizational change that promotes the effective use of advanced features of SOST.
13. My direct supervisor supports me in an organizational change that promotes the effective use of advanced features of SOST.

D. The following statements relate to individual characteristics that can influence the use of advanced features of SOST. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

14. If I heard about a new SOST's advanced feature, I would look for ways to experiment with it.
15. Among my peers, I am usually the first to try out new SOST's advanced features.
16. In general, I am hesitant to try out new SOST's advanced features.
17. I like to experiment with new information technologies SOST's advanced features.

E. Regarding individual preparation work for using the advanced features of the SOST, there may be a need for self-study (self-learning). The following statements correspond to perceptions of your behavior while engaging in SOST's advanced features study activities. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

18. I make a summary of my readings.
19. I make outlines as guides while I am studying.
20. I summarize every topic we would have in a learning environment.
21. I make a timetable of all the activities I have to complete.
22. I plan the things I have to do in a week.

23. If I am having a difficulty, I inquire assistance from an expert.
24. I welcome peer evaluations for every output.
25. I monitor my improvements in doing certain task.
26. I ask feedback of my performance from someone who is more capable.
27. I am open to changes based from the feedbacks I received.
28. I use a variety of sources in making my work.

F. The following statements reflect your perceptions about the individual skills you possess for effective use of the advanced features of SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

29. I have mastered SOST's advanced features use.
30. I cannot yet use SOST's advanced features as well as I would like.
31. I am able to perform tasks well using SOST's advanced features.
32. It is not yet possible for me to use SOST's advanced features at the level I like.
33. I think my ability to use SOST's advanced features can be improved substantially.

G. The following statements relate to the performance expectations you think you will achieve with the use of the advanced features of SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

34. I would find the SOST's advanced features useful in my job.
35. Using the SOST's advanced features enables me to accomplish tasks more quickly.
36. Using the SOST's advanced features increases my productivity.
37. If I use the SOST's advanced features, I will increase my chances of getting a raise.

H. The following statements relate to your perception of the individual effort you believe would be required to effectively use the advanced features of SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

38. My interaction with the SOST's advanced features would be clear and understandable.
39. It would be easy for me to become skillful at using the SOST's advanced features.
40. I would find the SOST's advanced features easy to use.
41. Learning to operate the SOST's advanced features is easy for me.

I. The following statements refer to perceptions about the role of influence from others in your effective use of the advanced features of SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

42. People who influence my behavior think that I should use the SOST's advanced features.
43. People who are important to me think that I should use the SOST's advanced features.

44. The senior management of this business has been helpful in the use of the SOST's advanced features.
45. In general, the organization has supported the use of the SOST's advanced features.

J. The following statements correspond to perceptions about the conditions of your company that influence its effective use of advanced features of the SOST. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

46. I have the resources necessary to use the SOST's advanced features.
47. I have the knowledge necessary to use the SOST's advanced features.
48. SOST's advanced features are not compatible with other systems I use.
49. A specific person (or group) is available for assistance with the SOST's advanced features difficulties.

K. The following statements refer to the intention to use the advanced features of the SOST in your company. Please indicate your level of agreement with the following statements using the following scale:

1 - Strongly disagree, 2 - Disagree, 3 - Neither agree nor disagree, 4 - Agree, 5 - Strongly agree.

50. I intend to use the SOST's advanced features in the next 3 months.
51. I predict I would use the SOST's advanced features in the next 3 months.
52. I plan to use the SOST's advanced features in the next 3 months.

Part II

Characterization data

Age: ____________

Gender: ☐ F ☐ M

Education:

☐ Incomplete high school ☐ High school ☐ Bachelor degree
☐ Master degree ☐ Doctoral degree

Job title: ____________

Number of years in the current position/company: ____________

Total number of years of work experience: ____________