Investigating the key factors to technology acceptance in an optical retail system

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university.

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Abstract

In order to determine the user's acceptance and the actual use of an information system, in the healthcare and in many other fields, many models and theories have been developed.

The purpose of the current study was to measure the end-users' acceptance of a system called "Acuitas" installed in 368 stores of the Italian optical retail chain Salmoiraghi&Viganò in 2010. The response rate was of 88 participants (approximately 5% of the S&V employees in the stores, including opticians, contactologists, store managers and clerks).

The factors affecting the system adoption, and those affecting its rejection, have been investigated thanks to an online questionnaire. The survey questions were based on the core-items of the Technology Acceptance Model (TAM). This model was introduced by Davis in 1989. Some of them were new, in order to estimate the self-confidence of the users in using the new system. In addition, participants to the survey were allowed to leave free comments related to each topic of the questionnaire; these comments became particularly useful during the analysis to partially trace back the reasons that pushed the participants to evaluate the items negatively or positively.

A Principal Component Analysis was conducted in order to identify the main constructs underlying technology acceptance. This study had a high explanatory capacity, explaining over the 70% of the variance in the acceptance analysis.

Some findings were in line with other reported studies. For example, the constructs about 'Perceived Usefulness' and 'Perceived Ease of Use' of Acuitas were strongly correlated one to each other. Also, usefulness and ease of use were related to the type of training that the end users attended and to the reliability of the technological infrastructure, which includes its technical support and the point of reference inside the organization.

In considering the results of the analysis, there is evidence that in view of a forced change of the way of working, the impact of a new technology should improve the quality of the users' daily routine, which implies major satisfaction for the end users and an overall more positive technology acceptance.

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Abbreviations

CTAM-TPB - Combined Technology Acceptance Theory of Planned Behaviour

ICT – Information and Communication Technology

IDT – Innovation Diffusion Theory

IT – Information Technology

MM – Motivational Model

MPCU – Model of PC Utilization

NUTS – Nomenclature of Territorial Units for Statistics

PCA – Principal Component Analysis

PDA – Personal Digital Assistant

SCT – Social Cognitive Theory

TAM – Technology Acceptance Model

TPB – Theory of Planned Behaviour

TRA – Theory of Reasoned Act

URL – Uniform Resource Locator

UTUAT – Unified Theory of Acceptance and Use of Technology

WWW – World Wide Web

1.Introduction

Information Technology in the healthcare sector has become essential all over the world. More specifically, IT applications such as decision support systems, clinical information systems, electronic health records, several web-based and mobile applications, telemedicine and many others are used commonly everyday by those professionals working in hospitals and within healthcare services.

It is recognized that a successful implementation of the technologies in the healthcare sector has to address and to overcome users' resistance and acceptance issues (Holden, Karsh 2010). It has been reported, for example, that physicians are frustrated because of some aspects of their practices, such as large patient loads, administrative tasks and reporting requirements, while on the other side there are patients who demand a better service, with a specific request of including the electronic communications in the doctor-patient loop (Kassirer 2000).

In order to determine the user's acceptance and the actual use of an information system, in the healthcare and in many other fields, many models and theories have been developed since the end of the Eighties. In the following chapter the most important of these models, starting from the Technology Acceptance Model (TAM) as described by Davis in 1989, will be reported and further discussed.

1.1. Context of the study

This research project has been developed within the Salmoiraghi&Viganò (S&V) software roll-out context. S&V is the biggest optical retailer in Italy and the company Ocuco Ltd. has installed its software "Acuitas" in 368 S&V stores, involving 1740 end users.

The roll-out started in June 2010 and it was completed on the 3rd December 2010. Among the end users there are different professional figures, such as opticians, contactologists, store managers and clerks.

Acuitas has replaced the previous information system (AS400-like) in use in all S&V stores. The new information system allows the end users to have one unique software to manage customers' and patients' data (personal data, prescriptions, work orders, etc.), to manage their own stock quantities, financial procedures and to access information on the network shared by other stores, such as stock quantities and customers' data registered in all other stores of the S&V optical chain.

The roll-out has involved 8 trainers, who were also responsible for the installation of the application on the "go-live" day.

The S&V employees working in the stores were asked to access a multimedia online training during the three/four weeks immediately preceding the go-live day, so that on the same go-live day they would have had a partial training already done. However, the fulfilment of attending the multimedia training online was not mandatory even if its full completion was monitored by Ocuco Ltd. Full training provided by the trainers on the go live day had to cover all the topics available online from the multimedia training anyway.

From the go live day onwards, a support helpline had been made available for the stores in order to provide technical and application support to the users.

1.2. Objectives of the study

The objective of this study is to measures the end-users' acceptance of a new information system by using the core-ideas of the Technology Acceptance Model (TAM). The factors which may affect the new system adoption, or rejection, will be determined by an online questionnaire developed to investigate the end users opinions.

In order to achieve these goals, an extensive literature review has been conducted to identify the most reliable models and theories which predict the likelihood of a new technology being adopted within an organization. Moreover, potential factors, which may have an effect on the acceptance of information systems, have been identified through the literature review. The weight of these potential factors has been quantified by involving several users in the research and by asking them to take part voluntarily into the online survey.

Many studies are focused only on investigating the lack of user-friendly interfaces, while others find out that the usefulness of the system could be more important than difficult interfaces.

This research aims to measure the end-users' perceived usefulness and the perceived ease of use of the new system (Acuitas) that Ocuco Ltd. has installed in the S&V stores. Secondly, but of no less importance, this study aims to identify the reasons why the users are accepting (or rejecting) this new information system at the time of the survey.

The online survey was published online 4 months after the end of the roll-out and remained available for five weeks in order to collect as many replies as possible from the employees in the stores.

1.3. Overview of the study

This work was born from the collaboration between a software company, Ocuco Ltd., based in Ireland, and an optical retail chain, Salmoiraghi&Viganò, based in Italy. It is relevant to those factors which promote the acceptance of a new information system in the optical retail industry. The work was focused on an extensive literature review about the Technology Acceptance Model and its derivations and on an analysis of the data collected through an online survey to investigate the users' perception of the software Acuitas.

The second chapter runs through the essentials of the technology acceptance models, highlighting how TAM evolved into different variations. The fundamental components and some theory of these models are presented too. Also, different kinds of studies applying the technology acceptance models are presented, both in the context of healthcare and of other fields.

The third chapter is dedicated to the methodology for this study. The rationale for conducting a quantitative analysis through an online questionnaire is presented first. This is followed by the description of the study design and the procedure, describing how the survey was structured and how it was made available online for the Acuitas users.

The fourth chapter describes the data analysis of the gathered data through the online questionnaire. The group of participants to the study are described, followed by the descriptive analysis of each item of the survey. After this, the Principal Components Analysis (PCA) was applied to the data in order to identify the major constructs underlying the technology acceptance. Pearson's correlation was then calculated among the constructs to identify the level of influence that each construct had one on each other. At the end of this chapter, some considerations are made about the free comments left by the participants to the survey.

The fifth chapter gathers the findings of the data analysis and some limitations to this research are recognized and presented. In light of these, some suggestions to achieve improved and more significant results in future studies are made.

The last chapter concludes this research, drawing conclusions from the entire work.

In appendices, the complete cover letter and survey are reported both in their English and Italian versions for the sake of completeness.

2.Literature Review

2.1. Impact of ICT: change or innovation?

All the processes which regulate the organizational actions are essentially based on four kinds of macro-resources: materials (such as tools, machines, integrated systems, etc.); professional abilities (such as individual skills); organizational links (such as connections among individuals, groups, authorities or institutions); information (set of facts which describe, specify, summarize, explain or generate phenomena of different natures) (The technology atlas team 1987).

This integrated and complex set of technical knowledge and organizational and managerial resources is called "technology" (Corti 2002), that can be defined as a particular type of knowledge. This knowledge may lie at the bottom of the governance of the technological system inside any kind of organization (Cosmi 2003). The issues related to the management of the technology are closely linked to the issues related to the management of the knowledge. Broadly speaking, the Information and Communication Technology (ICT) can be considered as a set of knowledge, which is the methods of analysis and management of flows of data and coded information.

Focusing on the relations between ICT and organization, starting from the '70-'80s, ICT has evolved from a pure technology for data elaboration to a technology that builds relations and organizations, increasing its impact on the business and making crucial the planning stage of the integration of ICT with organization.

This has been interpreted as a consequence of the fact that technology determines the organizational changes (push) (Strassman 1985). ICT is considered as an independent variable, which is part of the external scientific-technologic environment of the organization. This has a one-way effect on the organizational behaviour. On the other hand, according to other studies, the diffusion and use of ICTs are determined univocally by the information needs (pull) (Galbraith 1973, Tushman, Nadler 1978).

ICTs have inherently an open and modular structure that do not allow to define the ways they are used a priori, without taking into account the specific organizational context (Boddy, Buchanan 1986). Moreover, ICTs can be considered: "ambiguous", that is interpreted in different ways; "stochastic", because it is not possible to link causes and effects; "continuous", as the technology keeps evolving perpetually; "abstract", as the users work within symbolic processes that are open to misunderstandings (Weick 1990). Analysing the

ICT components is not enough: it must be taken into account also the meaning of these technologies in the organizational context (Boland 1986).

The diagram developed by Venkatraman in 1991 (Figure 1) focuses its attention on the existing relations among management processes, structure, individual and technology. In this chart the potential benefit gained through the ICTs and the level of business transformation induced by ICTs are related (Venkatraman 1991). At the lowest level, ICTs are mainly used to automate existing operational processes, in an environment where the impact on the organization is limited (automate > informate). At the next levels, ICTs are used to integrate internal processes and re-design internal processes (automate < informate). At the fourth level, ICTs are used to re-design the value chain and at the very top level, the impact of ICTs on the business is pervasive and gets in the way of the corporate philosophy, bringing the most of the benefits (informate rising).

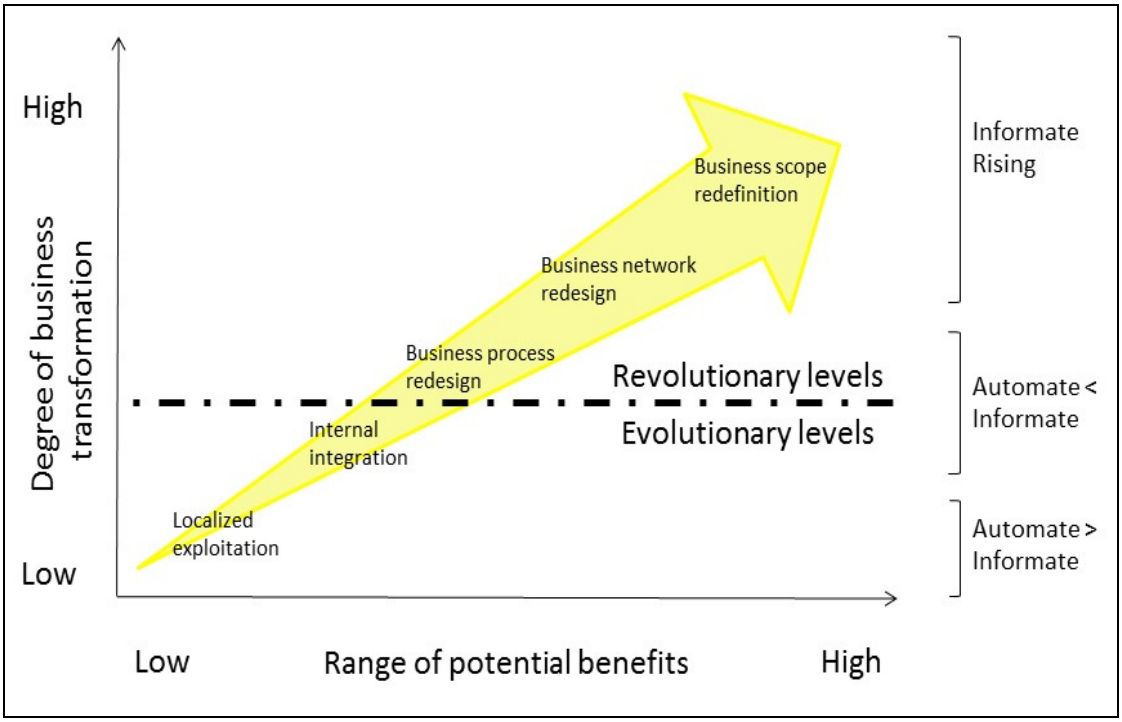

Figure 1 Impact of ICTs on the organizations (based on Venkatraman's paper) (Venkatraman 1991)**.**

This evolutionary path expresses the role of ICTs in the organizational context, where every positive technological change leads to an improvement of the resources already in use, but possibly not fully exploited. The technological change becomes technological innovation when the use of a specific technology is directed to the achievement of a concrete objective, perceived as positive (Corti 2002).

The literature reports the paradox of ICT, defined by Brynjolfsson in 1993 as the "Productivity Paradox", where even if the cost for the new technologies keeps increasing, it has not been possible to estimate its return of investment yet (Brynjolfsson 1993). Basically, there are difficulties in distinguish what exactly is impacting on the business performance, whether it is the ICT or any other variables, such as managerial processes, business strategies or human resources (Powell, Dent-Micallef 1997).

In order to face these difficulties, some methods have been developed in order to measure: the level of use; the relation between informative flows and decisional processes; how the adopted technologies can adapt themselves to the information needs; the reliability of information; the users' acceptance and their level of satisfaction (Laudon, Laudon 1998, Baily, Lawrence 2001). More specific, the end-users' satisfaction is at the centre of many studies found in literature. These studies have been looking for the way of modelling how the systems are connected to tasks. The core point of these models is being in search of the adoption and use conditions of ICTs, also depending on the organization culture (Pontiggia 1997).

In 1989, Davis developed the Technology Acceptance Model, based on the theory that the use of ICTs depends on two variables: the perceived usefulness and the perceived ease of use (Davis 1989). Keeping in mind that there are technology sources and technology consumers (organizations), and that technology can be transmitted, acquired, bought and adopted, any changes caused by the sources lead to a potential development of attitudes and/or resistances. Then, if these developments experience learning, demonstrations and experimentations, creating new processes, we have also innovation (Corti 2002).

2.2. Technology Acceptance Model (TAM)

As described by David in 1989, the original formulation of the Technology Acceptance Model (TAM) explains the technology acceptance in the light of two fundamental variables or predictors: the perceived "ease of use" and the perceived "usefulness" of the system (Davis 1989). These two variables have been described by Davis as follows:

- Perceived Usefulness: "The degree to which a person believes that using a particular system would enhance his or her job performance";
- Perceived Ease of Use: "The degree to which a person believes that using a particular system would be free from effort".

TAM boasts a wide success in the academic world, being the subject of many reviews and meta-analyses: it has become one of the most used models in Information Systems and this success is mainly due to its simplicity, potential and understandability (King, He 2006). The investigation process through TAM can be considered also immediate and natural: individual perceptions can be measured in a rigorous way by using a standard questionnaire and statistical analysis tools.

The core of TAM is shown in Figure 2 (Davis 1993): the attitude toward using a system has a direct impact on the actual system use. The attitude toward using, on the other hand, is influenced by two beliefs, perceived ease of use and perceived usefulness, which are the two fundamental predictors as already mentioned above.

In his studies, Davis found also that perceived ease of use has a significant direct effect on perceived usefulness. Users are more likely to adopt a system or an application because it can perform useful functions for them; how easy or hard it is to get these functions performed gains secondary importance. On the other hand, difficulties can discourage the adoption of a useful system.

System design features have a direct effect on perceived ease of use and perceived usefulness. This means that a designer willing to improve the user's perceived usefulness of a system should add new function capabilities to the system or should make easier to access and run an already existing function. Therefore, according to Davis, making the use of a system easier should make the system itself more useful.

He demonstrated that the opposite (i.e. usefulness influences ease of use) does not hold, however.

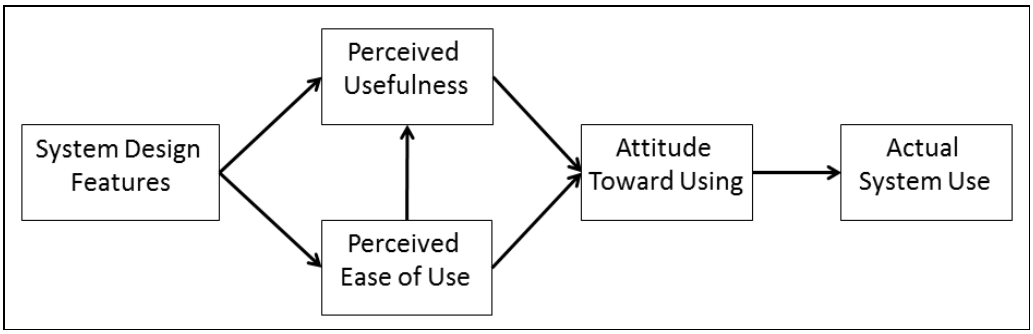

Figure 2 Technology Acceptance Model (Davis 1993)**.**

Since its first presentation in 1989, the Technology Acceptance Model has experienced an evolution, even though its core structure has been maintained. This reflects its flexibility and

high adaptation to a broad number of IT cases. In the analysis conducted by King and He in 2006, the authors recognised that four majors modifications have been applied to TAM, by reviewing 88 different papers reporting as many empirical studies (King, He 2006). These four changes to the original Davis' model have been schematised in Figure 3 and can be described as follows:

1) Prior factors: external precursors have been included, such as prior usage or experience, situational involvement and personal computer self-efficacy;
2) Factors suggested from other theories: these are factors aimed to increase the predictive potential of TAM, such as expectation, risk and trust;
3) Contextual factors: these are factors that may have moderator effects, such as gender and culture;
4) Consequent factors: consequence measures have been incorporated, such as attitude, intuitive usage and actual usage.

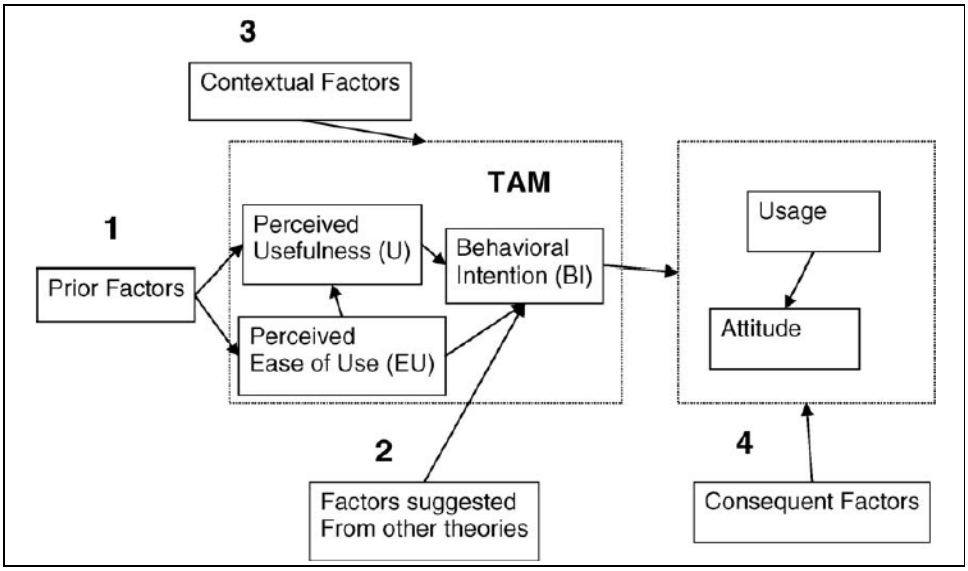

Figure 3 TAM and four categories of modifications (King, He 2006)**.**

In his paper dated 1993, Davis himself admitted that TAM might need extensions, in case that the investigation setting sees people who are requested to use a technology by their management. Under this condition, a "subjective norm" should be taken into account. This norm was firstly introduced by Ajzen and Fishbein through the Theory of Reasoned Act (TRA), shown in Figure 4 (Ajzen, Fishbein 1980). It represents the influence that others' opinions might have on the individual's choices. In this IT context it may be interpreted as the fact that users would use the system because they feel forced to use it by their

management. Other variables may include familiarity or experience with the system, complexity of the tasks, user involvement and design features (Davis 1993).

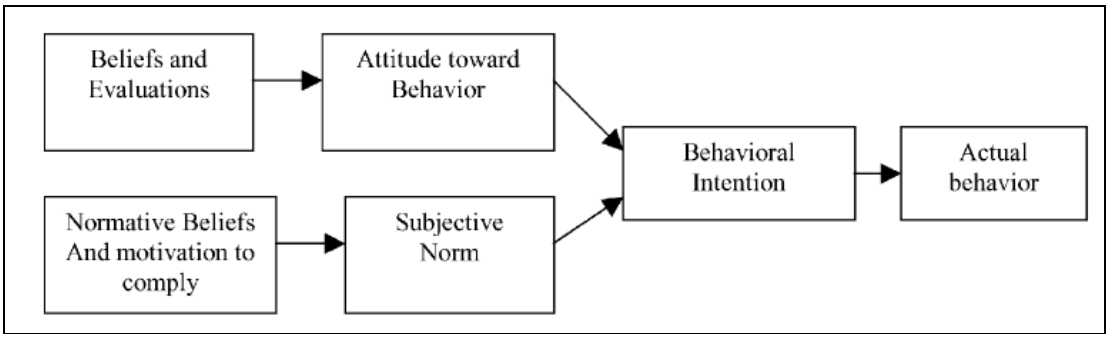

Figure 4 Theory of Reasoned Act (TRA) (Ajzen, Fishbein 1980)**.**

Davis decided not to take into account the subjective norm in his TAM model, because he estimated that it had an insignificant effect on behavioural intention. In 2000, Venkatesh and Davis reconsidered this choice by developing a second version of TAM, called TAM2.

2.3. Other previous studies related to perceived ease of use and perceived usefulness

Before Davis' work, many other papers had emphasized the importance of using the perceived ease of use and perceived usefulness in predicting the behavioural intention.

In 1975, Schultz et al. described how perceived usefulness was a reliable prediction for self-predicted use of a decision model (Schultz, Slevin 1975). Later on, in 1979, Robey confirmed that there is a high correlation between perceived usefulness and system usage, replicating in this way Schultz and Slevin's study (Robey 1979). In 1982, a meta-analysis conducted by Tornatzky and Klein pushed the importance of perceived ease of use and its impact on innovation adoption. The authors found that that there is a relation between the complexity of an innovation and its level of adoption (Tornatzky, Klein 1982).

In 1982, Bandura suggested that self-efficacy, similar to perceived ease of use, and outcome judgment, similar to perceived usefulness, are both important to predict users' behaviour (Bandura 1982). In the same year, Swanson wrote that users distinguish between perceived information quality (usefulness) and its associated cost of access (ease of use) and that they use information reports based on the trade-off between these two variables (Swanson 1982).

Finally, in 1986, Davis wrote his dissertation entitled "A Technology Acceptance Model for empirically testing new end-users information systems: theory and results", where he

concluded that users may accept or not accept a system whenever they believe that it helps to perform their job in a better way. He also indicated that the required efforts to use this system affect the usage behaviour (Davis 1986).

2.4. How the core questionnaire of Davis' TAM was developed

In order to measure the perceived ease of use and perceived usefulness, Davis developed his model based on psychometrics (Davis 1989), that is the field of study of the technique and theory of psychological measurement. Psychometrics is mainly focused on investigating the differences among individuals: given a specific context, several questions are submitted to participants of studies. The responses are then analysed and the results are considered as indicators of the participants' belief for the considered context.

Davis followed a step-by-step process to develop an appropriate measurement scale for the Technology Acceptance Model, with high reliability, consistency and validity. His aim was to develop psychometric scales for the two fundamental variables of his model: perceived ease of use and perceived usefulness. In order to achieve this objective, he started from a raw scale of 14 items, which he refined through three different stages:

1) Pre-test phase;
2) Empirical field study;
3) Lab experiment.

The number of items for each scale was chosen by Davis in accordance with the Spearman-Brown prophecy formula. This formula, also known as the Spearman-Brown prediction formula, is used by psychometricians to predict the reliability of a test after changing the test length: it helps to estimate the number of items needed for a reliable test. Comparing existing scales, the formula suggests that a reliability of at least 0.80 can be achieved with a scale of 10 items. However, Davis decided to add four other items to each scale, generating 14 items in total for each construct. These 14 items had to be cut down to 10 by going through the refining process.

In the pretesting phase, Davis submitted his raw scales for perceived usefulness and perceived ease of use to 15 participants to his study, who had to categorize all the statements depending on similar meanings. All the items referred to an electronic mail system, which was one of the technologies investigated within Davis' study. Participants were asked to

categorize and to rank the degree to which each item matched the definition of the constructs. The items with the lowest rankings were removed from the initial scales.

Some of the items tended to have overlapping meanings. This was made on purpose because different items were supposed to measure the same underlying construct.

Clusters of similarities were recognized by the participants to the study and those items that did not cluster with other statements were discarded, as they did not fit the content domain of the constructs. Moreover, some other items had to be reworded in order to make them clearer and more understandable.

After this phase, the initial scales were reduced to a 10 item scale for each construct. The validity and reliability of these scales were tested conducting a study that involved 112 workers in IBM in Canada. The participants had to rate the perceived ease of use and perceived usefulness of two systems they were using inside the company. The rating scale used for this testing was a Likert-like scale made of 7 points (1 = the participant strongly agreed with the proposed statement, 7 = the participant strongly disagreed with the proposed statement). Davis analysed the results with different methods (factor, component and multi-traits analysis). The results demonstrated that all the items had high reliability and validity.

Within the same study, Davis wanted to find a correlation between the two main variables, perceived ease of use and perceived usefulness, and self-reported usage of a technology. Therefore he asked to the same participants from IBM to rate their attitude towards their systems and their actual usage. In this way Davis confirmed that there is a significant correlation between self-reported usage and perceived ease of use and perceived usefulness, although this result was already published in his previous study conducted in 1986 (Davis 1986).

However, Davis wanted to streamline and purify the scales further, as shorter scales could be more practical if applied to real scenarios. He managed to reduce each scale to a 6 items scale, with a reliability of 0.97 according to the Spearman-Brown prediction formula.

These new scales were tested within a different laboratory setting. 40 participants were involved to validate the TAM model by using the new scales. Again, Davis found a positive correlation between the scales and self-predicted future usage. In general, it was gathered that usefulness has more influence on usage behaviour than ease of use.

In his conclusions, Davis suggested to keep investigating the relationships between constructs, self-reported behaviour and actual behaviour. This brought to several other studies with the aim of finding correlations between the variables suggested by the TAM model.

TAM adaptations, developed in following studies, will be summarized and described in the next paragraph.

2.5. TAM adaptations: TAM2

In 2000, Venkatesh and Davis decided to extend the TAM model by adding new key determinants to intention of use and perceived usefulness. Moreover, they wanted to find out how these determinants affected the users' experience with a new system after a specific amount of time.

The researchers kept TAM as the core-model and they expanded it including new constructs about social influence processes and cognitive instrumental processes.

The formers are processes such as voluntariness, subjective norm and image: they reflect the impact on individuals of three social factors that are interrelated one with each other. The social influence processes affect the individuals' decisions of choosing whether to use an information system or not.

The cognitive instrumental processes are processes such as result demonstrability, output quality, job relevance and perceived ease of use. These processes depend on the personal evaluation of the job type and available tools made by the individuals.

The result of this revised version of TAM had been called TAM2 (Venkatesh, Davis 2000).

The following paragraphs will explain in more details the processes included in TAM2.

Subjective norm – The need of adding the subjective norm to the Technology Acceptance Model was already suggested by Davis himself in 1993. The subjective norm was defined by Fishbein and Ajzen as a "person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Ajzen, Fishbein 1980). In this context it can be interpreted as the fact that people may tend to perform some tasks or to use a system whenever somebody in charge or with power thinks that they should do so, even if they are not fully favourable towards these tasks and their potential consequences. The perceived usefulness of the information tool will be also directly influenced by these external expectations and indirectly by the self-image given by the individual to the others. Thinking about the behaviours determined by the group norms, Pfeffer stated that an individual "achieves membership and the social support that such membership affords as well as possible goal attainment which can occur only through group action on membership" (Pfeffer 1982). A bigger group interaction and a bigger power of it can imply more productivity of the individual and of the group itself.

Voluntariness – TAM2 takes into account "voluntariness" as a new moderating variable. Voluntariness of use is defined as "the degree to which use of the innovation is perceived as being voluntary or of free will" (Moore, Benbasat 1991). Within an organization, corporate policies may mandate or discourage the use of a new system. Different degrees of voluntariness have to be taken into account: many studies assume that users adopt voluntarily new information systems, just because the adoption is not strictly mandatory, but a certain degree of compulsion could be measured anyway. As for the other factors of the model, it is not the voluntariness itself that influences the users' behaviour, but rather its users' perception. If an individual develops the intention of using an information system autonomously, then it will be more probable that the external expectations of the group will have less weight on his/her behaviour. Therefore, voluntariness is a factor that mitigates the influence of the subjective norms on the user's intentions. As Hartwick and Barki found in their studies, subjective norms have more power if the individual adopts a behaviour when told to behave in that manner. The same subjective norms will lose completely their power when behaviour is the result of a voluntary act of the individual himself instead.

Image – The third social influence process involved in TAM2, image, has been defined as "the degree to which use of an innovation is perceived to enhance one's status in one's social system" (Moore, Benbasat 1991). In other words, the idea behind the image process is that almost any individual is pushed to adopt an innovative technology by the desire to gain social approval and / or a better social status (Rogers 1983). As it happens for the subjective norms, a better image inside the work environment can improve the productivity levels, by improving the interactions inside the group itself. Therefore "image" has also a positive role in increasing the perceived usefulness of a technology.

Experience and social influence – Experience is a very important factor that affects the social influence processes. Many theories and studies have suggested that the effects of subjective norms decrease as the individual experience increases in time. In other words, when the users don't know thoroughly the information system they are going to use, they will tend to give more importance to the expectations and opinions of a third party, especially to evaluate the information system itself. This happens because third parties shall know much more about the system than the new users (Barki, Hartwick 1994). When the system is implemented and the user gets used to it and learns its strong points and weak points, the influence of other people decreases drastically, up to vanish completely.

Job relevance – This process refers to the individual perception of matching the correct technology with one's own job type. If the user's tasks can be related to the functionalities

available within an information system, then the perceived usefulness of the system itself will benefit from this correspondence between tasks and functionalities. The concept of "job relevance" is very close to the task-technology-fit concept, described by Goodhue in 1995. Goodhue stated that "to have a positive impact on individual performance, the technology must be utilized and must be a good fit with the tasks it supports" (Goodhue, Thompson 1995).

Output quality – The output quality is very important in determining the perceived usefulness of a technology. At the beginning of their study, Venkatesh and Davis hypothesized that this kind of process was not directly related to the perceived usefulness. The results of the same study, on the other hand, demonstrated that the output quality had a significant role in case the technology had a big correspondence with the users' tasks. It can be gathered that if the technology is not useful to the user to accomplish the main tasks, than the output quality is pushed into the background.

Result demonstrability – Moore et al. defined this factor as "the tangibility of the results of using the innovation" (Moore, Benbasat 1991). Even the most effective information systems can be rejected by users, in case they have difficulties in awarding the technology for their performance improvements. Therefore, if the advantages of a technology are easy to understand and measure for the user, then the perceived usefulness will get benefits from it.

2.6. TAM adaptations: UTAUT

Venkatesh et al. developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model in 2003 (Venkatesh et al. 2003). The researchers identified eight different models developed in the previous years that explained the adoption and use intentions of a new technology. These models are all sharing the same basic concepts, which are "individual reactions to using information technology", "intentions to use information technology" and "actual use of information technology". The aim of Venkatesh's study was to integrate these eight widely recognized acceptance models in one unique model (see Figure 5). With the formulation of the UTAUT model, the researchers explained the usage of information technology as a dependent variable.

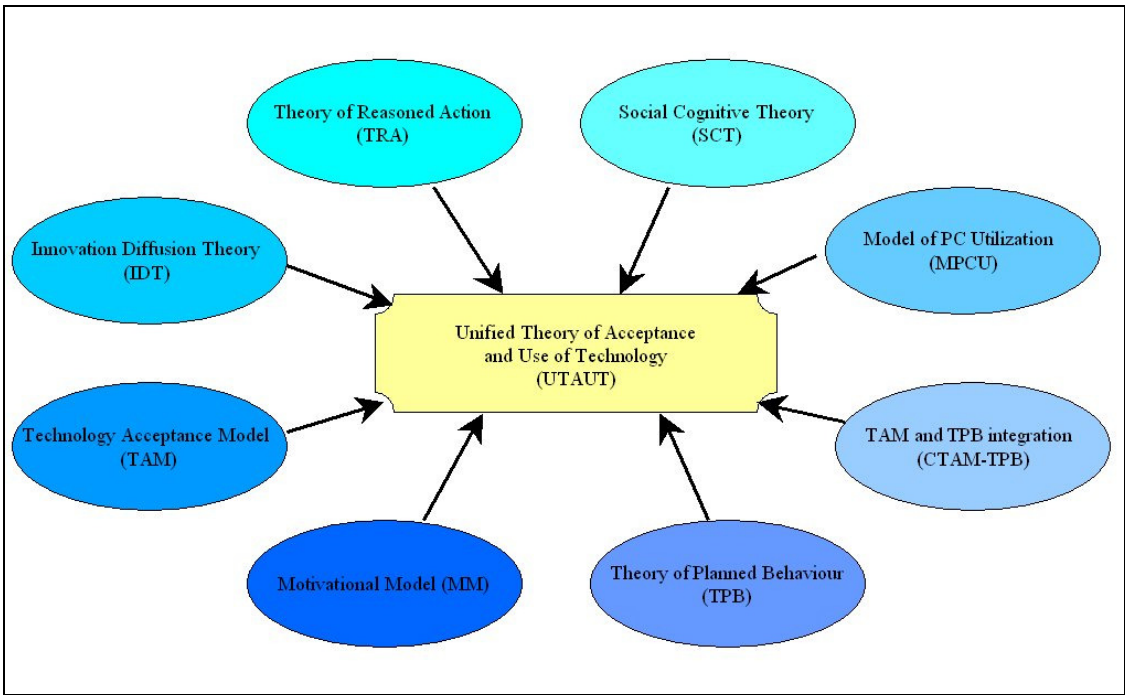

Figure 5 The eight models incorporated in the UTAUT model by Venkatesh.

The UTAUT model incorporates all constructs of the eight previous models and is basically the evolution of the first TAM model developed by Davis in 1989.

In UTAUT there are four constructs which are direct determinants of user acceptance and usage behaviour and which are considered main effects:

- Performance Expectancy
- Effort Expectancy
- Social Influence
- Facilitating Conditions

The UTAUT model takes into account four moderating variables, which influence the impact of the four main effects on behavioural intention and use behaviour. The links between main effects, moderating variables and resulting behavioural intention and actual use behaviour are schematized in Figure 6.

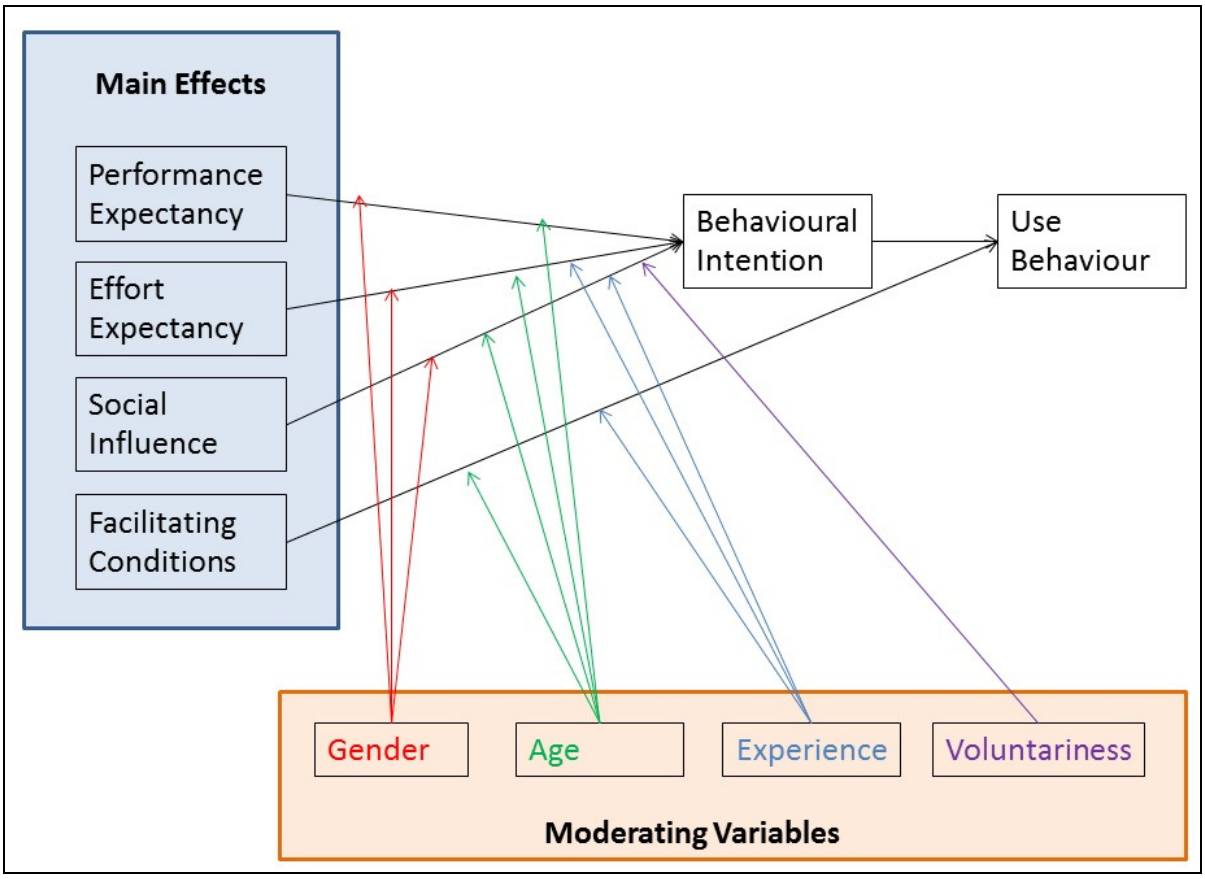

Figure 6 UTAUT model: its constructs (main effects), moderating variables and causal relationships (Venkatesh et al. 2003).

The constructs of Performance Expectancy and Effort Expectancy correspond to those of Usefulness and Ease of Use as described in TAM. Venkatesh described the Performance Expectancy as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" and the Effort Expectancy (EE) as "the degree of ease associated with the use of system" (Venkatesh et al. 2003). Both Performance Expectancy and Effort Expectancy concur in determine the Behavioural Intention.

Some studies which apply the UTAUT found that there is a relation between performance expectancy and behavioural intention, and that this relation is also driven by demographics factors, such as gender and age. The strongest influence resulted more relevant for younger men (Venkatesh et al. 2003, Davis 1989, Venkatesh, Davis 2000).

Performance Expectancy resulted in being the strongest predictor of intention to use new IT systems. This was experienced in both voluntary and mandatory settings (Davis 1989, Venkatesh, Davis 2000).

Gender, age and experience are the demographics factors that moderate the effect of Effort Expectancy on behaviour intention. Younger women with beginner experience are those subjected to the strongest impact (Venkatesh et al. 2003).

Social Influence, also described by Schaper and Pervan as "the degree to which an individual perceives that important others believe he or she should use the system" (Schaper, Pervan 2007), is a construct that is mentioned in six of the eight models unified in the UTAUT, although with different denominations. It is called "Social Norms" in TRA, TAM2, TPB, CTAM-TPB, "Social Factors" in MPCU and "Image" in IDT (see Figure 5 for the full description of the acronyms). The definition of Social Influence given by Venkatesh follows that of the former "Subjective Norm" introduced by Fishbein and Ajzen in 1975 with the Theory of Reasoned Action.

Venkatesh found the age, gender, voluntariness and experience are the factors with the biggest impact on social influence, and therefore on behaviour intention too. In particular, older women with beginner experience in mandatory settings are those mostly influenced by this third construct (Venkatesh et al. 2003).

The fourth construct of UTAUT is Facilitating Conditions. It has been defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Hennington, Janz 2007). This construct gets together three different concepts from three of the eight models unified by UTAUT: Perceived Behavioural Control from the Theory of Planned Behaviour, Facilitating Conditions from the Model of PC Utilization and Compatibility from the Innovation Diffusion Theory.

Venkatesh found that Facilitating Conditions have a strong effect on predicting the actual use of a technology, but if the other two constructs (Performance Expectancy and Effort Expectance) are present, their impact is almost insignificant. He also found that age and experience are the demographics factors that affect the influence of Facilitating Conditions on usage of a technology. Older users with greater experience have a stronger impact on this construct (Venkatesh et al. 2003).

2.7. TAM application in various fields

Since Davis published his first paper about TAM, the model and its following revisions have been applied to different kind of IT technologies. These include, among others, text editors, business intranets and applications, office automation, mobile technologies, electronic commerce, software development and websites. Moreover, the consistent literature review

reports that TAM has been applied to many different fields, such as information systems, business, cybernetics, healthcare and management, suggesting the TAM has become a well-developed interdisciplinary theory.

As King et al. stated in their meta-analysis of TAM: "The TAM measures are highly reliable and may be used in a variety of contexts" (King, He 2006).

In 2008, Kim et al. published a study where they applied TAM to the adoption of an hotel front office system, investigating perceived value and information system quality involving 239 hotel employees. The use of this hotel front office system was mandatory. From the results it was gathered that the easier the use of the system is perceived to be, the more likely employees will perceive its usefulness. Moreover, the results supported the hypothesis that information, system and service quality influenced positively the actual use of the system. According to the authors, TAM for a hotel organization needs a specific approach because of the peculiar characteristics of the organization itself. The study conclusions were: frontline employees shall be able to share and update data continuously, they shall spend less time on the system and more on customer service tasks, design shall make the technology itself easier to understand and the system itself shall be more flexible to changes (Kim, Lee & Law 2008).

163 subjects have been involved by Lederer et al. in a study which applied TAM to the World Wide Web as the users' application. The aim was to highlight the predictors of WWW usage. As the previous cited research, it was gathered that information quality was one of the most powerful predictors, together with ease of understanding. The research was focused on frequently visited sites, where users tend to adjust to navigation difficulties more easily. Lederer et al. concluded the designers shall provide web sites that are easy to use and useful, so that people is encouraged to access them more frequently. They also concluded that TAM was validated in this context of the World Wide Web (Lederer et al. 2000).

In a different context, Hao Tian et al. conducted an empirical evaluation in 2010 on the acceptance of wireless mobile office technologies. The researchers extended TAM based on perceived ease of use and perceived usefulness with perceived trust of wireless environment. Again, according to the peculiarities of the investigated environment, the model can be adapted accordingly. In this case, the revised TAM supported that the technology factors influence the acceptance of mobile office applications and services (Hao Tian et al. 2010).

2.8. Technology acceptance in healthcare

Researches in the health information technology field are mainly focused on the design and implementation of information systems and, according to a study by Holden and Karsch, "not enough on how clinician end users react to already implemented IT" (Holden, Karsh 2010).

In 2003, TAM was applied to a research involving high street opticians in the UK (Chadwick, Mundy & New 2003). The study investigated the user acceptance of a system which gave access to a diabetic information system in a hospital through a web interface. The goal of the system was to give opticians access to the patients data, in order to improve patient care and data quality. Among the key factors of this research there were investigating system usability and reliability. It emerged that a slow speed of connection is a big barrier to the system's frequent use. Moreover, it was found that it is very difficult to develop an efficient web-interface that suits all the end users: both opticians and GPs could use the same system, and the researchers had "as much negative feedback from the opticians about the tabbed format, as from the GPs about the scrolling paged format. This demonstrates that the human interface for any system is one of the most difficult artefacts to build."

Moving our attention to different healthcare fields, Chismar et al. investigated the adoption of the internet among paediatricians by using TAM2 (Chismar, Wiley-Patton 2002). They involved 89 paediatricians in a survey and from the results it could be gathered that the key factors of the technology acceptance were related to usefulness and job relevance. Less importance was given to ease of use and social factors. Chismar et al. reported that physicians are willing to use beneficial technologies even if they are not ease to use. Moreover, the researchers noticed that the perceived ease of use may have less impact on technology acceptance as the user's competency increases.

In 2003, Gagnon et al. involved 60 physicians in their research about acceptance and intention of use of telemedicine in the clinical practice. The model was based on interpersonal behaviour theory. From the results it could be gathered that social and personal normative factors were strong indicators of the intention of use of telemedicine (Gagnon et al. 2003).

A larger study was conducted by Yi et al. in 2006. The aim was to investigate the adoption of PDAs by healthcare professionals. 222 physicians from the US were involved in this research, which integrated three acceptance models (TAM, TPB and IDT). The study registered a high degree of acceptance and use of PDAs in the clinical practice. Perceived

usefulness, perceived ease of use, subjective norm and perceived behavioural control had a strong and direct influence on behavioural intention (Yi et al. 2006).

Other studies show that the acceptance or rejection of IT in healthcare depends on how these systems fit the clinical work systems. The results are that end users will tend to use or misuse them, to integrate them in their job routine or work around them. The IT adoption in healthcare is also influenced by the possibility for the end users to continue to work with no disruptions of the daily practice while introducing the new technology.

The literature review focused on user acceptance theories in general and then, specifically, in healthcare and revealed that there is an increasing interest in models such as TAM within this specific field (Holden, Karsh 2010). There is also a need for standardization, together with a better reporting of results. In this way it will be possible to find out in the future what the specific barriers are and what the facilitating factors are to information technology use.

3.Methodology

This research is an evaluation of the acceptance of a system called Acuitas in a real setting, such as the optical retail chain S&V.

In order to choose the best method to identify key barriers to end users' acceptance of the new information system, an extensive literature review was conducted by using keywords such as "user acceptance", "rejection", "technology / IT acceptance", "barriers", "roll-out", etc. The author had an overview of the major studies across different domains, clinical and non-clinical, where other researchers evaluated users' acceptance and rejection of other information systems and technologies.

Different approaches have been found in literature in order to measure the psychological process that end-users go through in accepting, using or resisting information technologies. These studies included laboratory experiments (f.e. (Pontiggia, Virili 2010)), field studies (f.e. (Agarwal, Prasad 1999)) and a few qualitative studies (f.e. with semi-structured interviews such as in (Austin et al. 2006)).

The researcher and the other parts involved, that is the software company Ocuco Ltd. and the optical chain S&V, wanted to involve all the end users of the application Acuitas, who had been using the software since July 2010. The goal for both the companies was to measure the end users' feedback about the new system by using a well-established and existing approach.

The large number of potential participants (1740 S&V employees) to this study and the time in the researcher's hands made the researcher exclude the use of qualitative studies with one-to-one interviews. The laboratory setting was not considered because Acuitas was running in a live setting already when the idea to conduct this research was taken. Also geographic limitations were taken into account when choosing the most suitable approach, as the researcher was based in Dublin (Ireland), while the S&V employees were based across several multiple locations in Italy.

For the reasons listed above, to investigate the use of Acuitas the use of an online questionnaire was considered the most appropriate method to collect data for this research. In this way all the employees could be all reached and asked to take part into the survey with a reasonable effort and without incurring in extra costs. Also the chosen method was new to the author; therefore it had the additional advantage of providing significant learning experience for the researcher.

In the following paragraphs, it is described how the data sources, that are the answers to the survey collected from the S&V users, have been obtained during the first stages of the research implementation.

3.1. Study design and ethics considerations

The author developed a web-based survey that contained six different sections for a total of thirty-nine questions. The survey was introduced by a brief presentation and description of the research, indicating the goals of the study and what the participants were required to do. The initial introductions and questionnaire was formulated in English and then translated into Italian, to increase the potential number of participants to the study.

It was possible to access the questionnaire only by confirming that the introduction was fully read and understood.

The major sections of the questionnaire can be summarized as follows:

- Section 1: six demographic questions including sex, age range, education degree, work experience and a self-evaluation on the approximate time spent working with the new application and on which parts of the system were mostly used.
- Section 2: six items asking the participants to evaluate the Perceived Usefulness characteristics using a Likert 1-5 scale.
- Section 3: six items asking the participants to evaluate the Perceived Ease of Use characteristics using a Likert 1-5 scale.
- Section 4: three items asking the participants to evaluate the perceived IT performance using a Likert 1-5 scale.
- Section 5: three items asking the participants to evaluate the attended multimedia online training and two items to evaluate the attended in-store training on the go live day using a Likert 1-5 scale. Each sub-section could be answered by those who had attended the online or in-store training.
- Section 6: five items asking the participants to evaluate generic statements about the superiors' support and their self-confidence in using the system it using a Likert 1-5 scale.

Each section, but section 1, was followed by a free text field where participants could enter additional and relevant comments about the previous statements.

A preview of the survey was showed to the IT director of S&V before being sent out to the stores. From his feedback and observations, small changes such as rewording of a few items

and the decision to remove an entire section about the perceived store performance with the new application were made. Minor changes were applied also to the instructions given at the beginning of the questionnaire too.

No major issues had arisen as considering the potential ethical consequences of this project. It had not to be possible to trace back any personal data that were not openly requested in the survey (such as age, education level…). Only a timestamp was recorded automatically for each answer in order to uniquely distinguish one reply from another. The survey could be completed on a voluntary basis and the possibility to withdraw at any time was given to all the respondents. Users' consents had to be obtained before acquiring, holding or using any submitted data. The web-based survey contained a statement explaining what the information had to be used for. Collected data were not disclosed to third parties and were only legitimately used for this study purpose.

3.2. Procedure

After the company's approval, the questionnaire has been published online by using a service on the internet via GoogleDocs, provided by Google. This tool was chosen to save money and time, as it is free and allows importing the data collected directly into other analysis programmes, such as Microsoft Excel.

The settings were set so that only those who were given the direct URL could access it and only the author could review any data in it. The URL was then sent to the IT department of S&V and access was granted to the stores from the intranet of the company. A test was made to make sure that from a pilot store the survey could be accessed and the answers to the survey registered properly. This test was then deleted by the owner of the research.

The IT department sent an email to the stores briefly presenting the research and inviting them to access the survey through the provided unique URL. They were given five weeks to take part into the survey. After the deadline, access to the URL from the S&V intranet was closed.

4.Data Analysis

In the following chapter, the results of the online survey will be presented. The data were collected via GoogleDocs and imported into MS Excel and IBM SPSS (Statistical Package for the Social Sciences). The objectives are to analyse the users' perception of Acuitas and ultimately to find what are the key factors to the adoption (or rejection) of a new information system within a large optical retail organization such as S&V.

4.1. Demographics of Respondents

At the end of April 2011, 1740 S&V employees in the stores had potential access to the survey, as they were given access previously to the multimedia training online for Acuitas.

Complete answers were received from 89 participants (i.e. 5.1% of the employees took part into the survey). Only one answer had to be considered invalid (1.1% of the total replies) as it was a blank reply with no data and information in it at all. Therefore, valid answers were 88 for this study, with a final response rate of 5.0%.

As summarized in Table 1, 46 respondents (52.3%) are women and 42 ar men (47.7%). More than 60% of the respondents have an age between 20 and 39 years old (33% between 20 and 29 years old and 37.5% between 30 and 39 years old).

About the highest degree of education, only the 9.1% specified clearly that they hold an optician diploma, while the majority (67%) hold a high school degree. 18.1% hold a higher degree such as a University Bachelor's or a Master's Degree. Only one person did not indicate anything for this question (1.1%).

The majority of the respondents have been working in the optical retail industry from 5 to 10 years (27.3%), followed by a close percentage of those who have been working in the same industry for less than 5 years (26.1%). More experienced people, who have spent more than 20 years in this field, represented the 22.7% of the respondents.

Section 1: Demographic Information		
	Frequency	**Percentage**
Gender		
Female	46	52.3
Male	42	47.7
Total	**88**	**100.0**
Age		
20-29 years old	29	33.0
30-39 years old	33	37.5
40-49 years old	19	21.6
50-59 years old	6	6.8
> 60 years old	1	1.1
Total	**88**	**100.0**
Education level		
Middle School degree	4	4.5
High School degree	59	67.0
Bachelor's degree	12	13.6
Master's degree	4	4.5
Optician Diploma	8	9.1
Not Specified	1	1.1
Total	**88**	**100,0**
Years of work in optical retail industry		
< 5 years	23	26.1
5-10 years	24	27.3
10-15 years	16	18.2
15-20 years	5	5.7
20-25 years	11	12.5
>25 years	9	10.2
Total	**88**	**100.0**

Table 1 Demographic Information

As every single store has its own identification number, respondents could indicate this ID within the survey. In this way it was possible to analyse the geographical distribution of the replies (see Figure 7). The 9.1% of the respondents did not indicate any store identification number. The 80 people who indicated their store ID come from 62 different stores, meaning that in some cases more than one employee working in the same store took part into the survey. The survey was sent to 368 stores in total, meaning that the replies came back from the 16.8% of the stores.

According to the Nomenclature of Territorial Units for Statistics (NUTS), the majority (39.8%) of the respondents are from North-West of Italy, followed by North-East (29.5%), South (13.6%) and Centre (8.0%) of Italy, as summarized in Table 2.

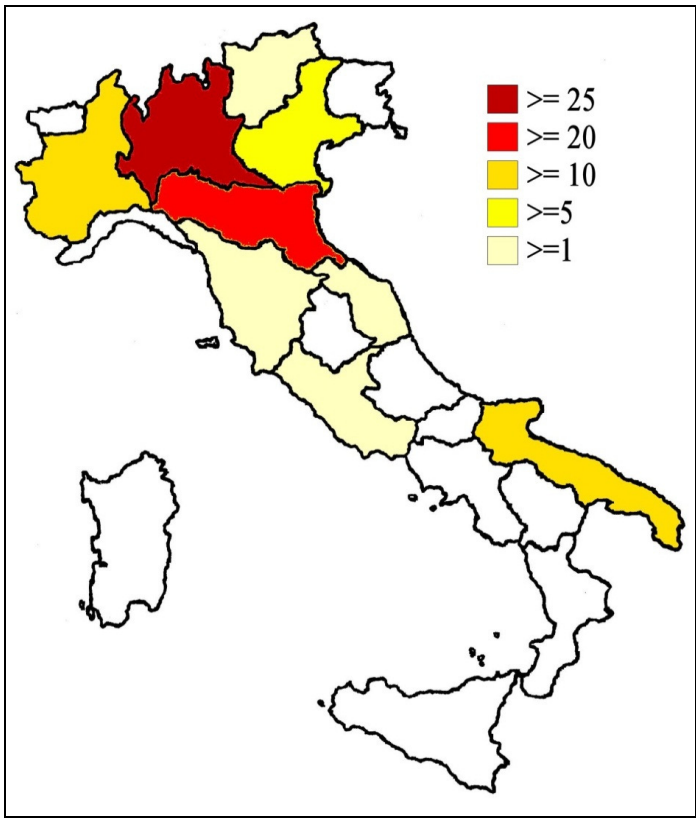

Figure 7 Distribution of the respondents divided by Italian region (number of replies).

NUTS region	Frequency	Percentage
North-West	35	39.8
North-East	26	29.5
South	12	13.6
Centre	7	8.0
Not Applicable	8	9.1
Total	**88**	**100.0**

Table 2 Geographic distribution.

About the average daily use of the new system (see Table 3), the 11.1% specified that they are using the application less than 2 hours per day. No correlation (r=0.31) was found between the amount of time spent on the application and the number of modules of the application in use, even though it was initially hypothesized that people who have less time to spend on the system during the day, might use only some sections of it. Most of the respondents (38.6%) use the application between the 4 and 6 hours a day. These replies were all based on a self-evaluation made by the participants.

S&V employees were asked to indicate which modules of the application they used mostly. The 47.7% of the respondents ticked all the available five options, meaning that they use the

system in its entirety, from the customer management to the stock management module, from the till procedures to the back office module. 13.6% of the respondents use only 1 or 2 of the available modules, mainly the customer management module and the till (75%). The modules with the lowest rate of users are the back office and the work list ones, which are usually in use by store managers even though every user can access to them.

Use of Acuitas		
	Frequency	**Percentage**
% of use for each single module of Acuitas		
Customer Management (CM)	85	96.6
Back Office (BO)	61	69.3
Stock Management (SM)	72	81.8
Work List (WL)	53	60.2
Till (TI)	77	87.5
Self-evaluation of the average time spent daily using Acuitas in the workplace		
< 2 hours	10	11.4
2-4 hours	28	31.8
4-6 hours	34	38.6
6-8 hours	16	18.2
Total	**88**	**100.0**

Table 3 Use of Acuitas

4.2. Descriptive Analysis

Some basics descriptive analysis was performed for each item in sections 2, 3, 4, and 6 of the questionnaire. Mean (μ), standard deviation (σ) and the percentage of replies are displayed in Table 4 for each item/variable. Section 5 is described in Table 6, as groups of items could be evaluated by the respondents only if they had attended the online training and/or the training on the go live day.

As a reminder, the participants were asked to evaluate each item by using a Likert 1-5 scale, with the following meanings:

- (1) = Strongly disagree
- (2) = Disagree
- (3) = Neither agree nor disagree
- (4) = Agree
- (5) = Strongly agree

Cronbach's alpha coefficient was calculated for the 25 items in order to investigate their internal consistency. The reliability coefficient for this research is equal to 0.928, meaning that answers differ because participants have different opinions and the questionnaire has not potential multiple interpretations. A Cronbach's alpha > 0.70 is considered acceptable and

according to George and Mallery a coefficient > 0.90 is excellent (Darren George, Mallery 2003).

Item description	**Variable name**	**Mean (μ)**	**Standard Deviation (σ)**	**% of replies**
Section 2: Perceived usefulness statements (Group PU)				
Using Acuitas has improved my performance in doing my job	PU1	3.15	1.09	98.9
Using Acuitas at work has improved my productivity	PU2	2.86	1.01	100.0
Using Acuitas has enhanced my effectiveness in my job	PU3	2.91	1.10	98.9
I find Acuitas useful in my job	PU4	3.32	1.07	100.0
Using Acuitas has made easier to do my job	PU5	2.67	1.11	100.0
Using Acuitas in my job enabled me to accomplish tasks more quickly	PU6	2.60	1.21	98.9
Section 3: Perceived ease of use statements (Group PEOU)				
Learning to operate Acuitas was easy for me	PEOU1	3.83	1.04	98.9
I find it easy to get Acuitas to do what I want it to do	PEOU2	2.84	1.20	98.9
It was easy for me to become skilful in the use of Acuitas	PEOU3	3.73	0.95	97.7
I find Acuitas easy to use	PEOU4	3.63	1.05	98.9
My interaction with Acuitas is clear and understandable	PEOU5	3.52	1.07	98.9
I find Acuitas to be flexible to interact with	PEOU6	2.97	1.07	98.9
Section 4: Perceived IT performance statements (Group PIT)				
I think that Acuitas is a reliable system	PIT1	3.51	0.92	100.0
Acuitas is always available when I need it	PIT2	3.24	1.01	100.0
It is easy for me to do my job when Acuitas is not available due to technical issues	PIT3	2.48	1.10	97.7
Section 5: Received Training (Group RT) - See Table 6				
Section 6: Other statements (Group SN and SC)				
A specific person is available to assist if there are difficulties with the system	SN1	3.42	0.95	97.7
I think I can accomplish my tasks with Acuitas even if there is nobody who can help me nearby	SC1	3.94	0.94	100.0
I think I can accomplish my tasks with Acuitas if I have lot of time available	SC2	2.99	0.97	98.9
I hesitate to use Acuitas as I am afraid to make mistakes that I cannot correct / change	SC3	2.19	1.31	97.7
My superiors and my organization support Acuitas and help with it	SN2	3.54	1.01	98.9

Table 4 Descriptive statistics of sections 2, 3, 4 and 6 of the online questionnaire.

Section 5 of the online survey was about the evaluation of the training attended online or in person on the go-live day of Acuitas. Participants were asked to evaluate the items of this section only if they had attended one or both the modalities of training.

According to the replies, the 68.2% of the respondents attended both the online and the in-store training; the 27.3% attended only one of the two types of training, while the 4.5% did not attend any of the two available kinds of training. Combinations of training attendance are summarized in Table 5, Figure 8 and Figure 9.

Training attendance	**Frequency**	**Percentage**
Attended the multimedia training online and the training in person on the go live day	60	68.2
Attended the training in person on the go live day only	17	19.3
Attended the multimedia training online only	7	8.0
Not attended any kind of training	4	4.5
Total	**88**	**100.0**

Table 5 Self-reported training attendance.

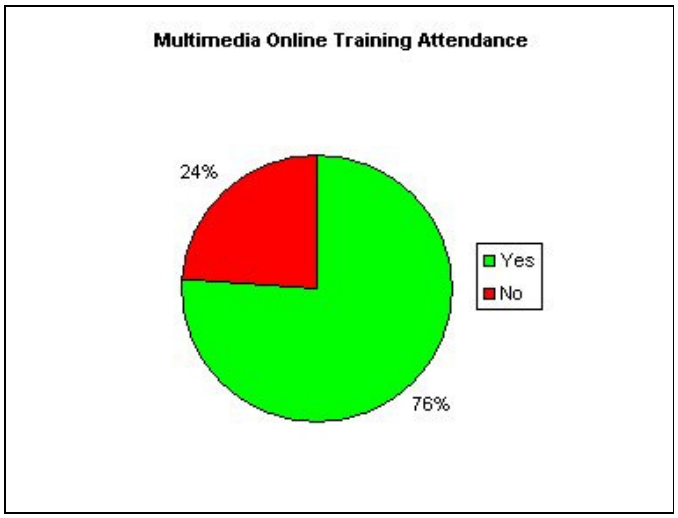

Figure 8 Self-reported multimedia online training attendance.

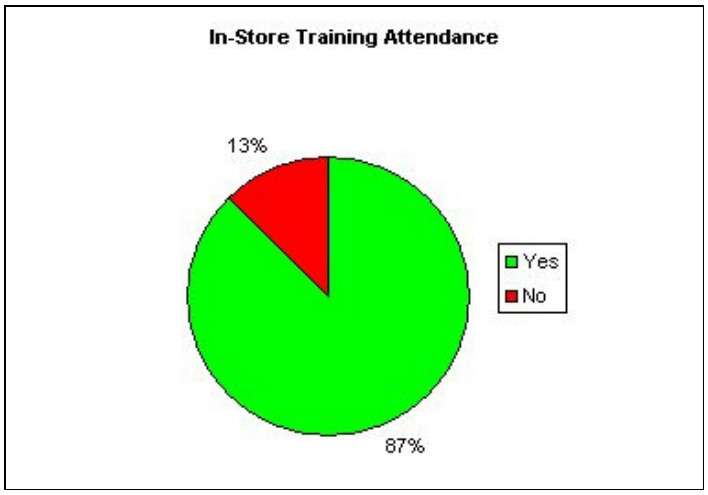

Figure 9 Self-reported in-store training attendance.

67 respondents evaluated the online training, 77 evaluated the in-store training with the trainer. Mean (μ), standard deviation (σ) and the percentage of replies for these items are displayed in Table 6.

Item description	**Variable name**	**Mean (μ)**	**Standard Deviation (σ)**	**% of replies**
Section 5: Received training statements (Group RT) – Online Training				
The multimedia training was/is easily accessible	RT1	3.75	1.08	100.0
The multimedia training was easy to understand	RT2	3.81	1.02	100.0
The multimedia training has been useful to understand the basic functionalities of Acuitas	RT3	3.76	1.09	100.0
Section 5: Received training statements (Group RT) – In-Store Training				
The training in person on the go live day has covered all the topics I needed to work with Acuitas independently	RT4	3.57	1.23	98.7
I have been well overall trained in the use of Acuitas on the go live day	RT4	3.57	1.16	100.0

Table 6 Descriptive statistics of section 5 of the online questionnaire

In order to have a view of the use of the technical helpdesk, the participants were asked to estimate how many times they had contacted the phone support for the new system in a period of 4 weeks. The results are summarized in Figure 10. 75% of the employees have contacted the helpdesk at least once in a month. These figures give a rough indication of the real use of the helpdesk, as results may vary from time to time, depending on which version of the application is in use in the stores.

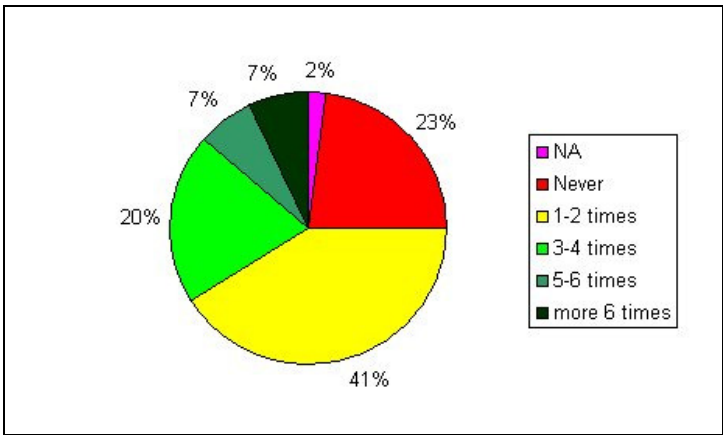

Figure 10 Distribution of how many times the technical support / helpdesk has been contacted in a period of four weeks.

4.3. Levels of items' evaluation

In the following paragraph a view for each section (2, 3, 4, 5, and 6) of the questionnaire is reported, in order to describe how the end-users have evaluated each item of the survey using the Likert scale. The results are represented with clustered column charts in order to compare values across the categories of the Likert scale.

* **Perceived usefulness evaluation** (see Figure 11) – Section 2 had six items asking to evaluate the perceived usefulness of Acuitas. The majority of the respondents (40.9%) agree that the new application has improved the end-users' performance while doing their job in store (variable PU1). Negative types of feedback (disagree and strongly disagree) for this item represent together the 28.4% of the total. The second item (variable PU2) has not a predominant percentage: those who agree (31.8%), disagree (29.5%) and neither disagree or agree (28.4%) with saying that the new system has improved the users' productivity are almost balanced. 29.5% of the respondents believe that Acuitas has enhanced their effectiveness in the job (variable PU3), but again if we sum the positive feedback (agree and strongly agree) and the negative one (disagree and strongly disagree), the percentages are close (34.0% and 36.4%). 39.8% of the respondents find Acuitas useful for the job (variable PU4), and together with those who strongly agree with the same statement (10.2%), means that the 50.0% of the participants is positive and finds the application useful. Higher levels of disagreement were reported for the last two items of this section: 17.0% strongly disagree that Acuitas has made easier their job (variable PU5) and 22.7% strongly disagree that the system allows to complete tasks more quickly (variable PU6).

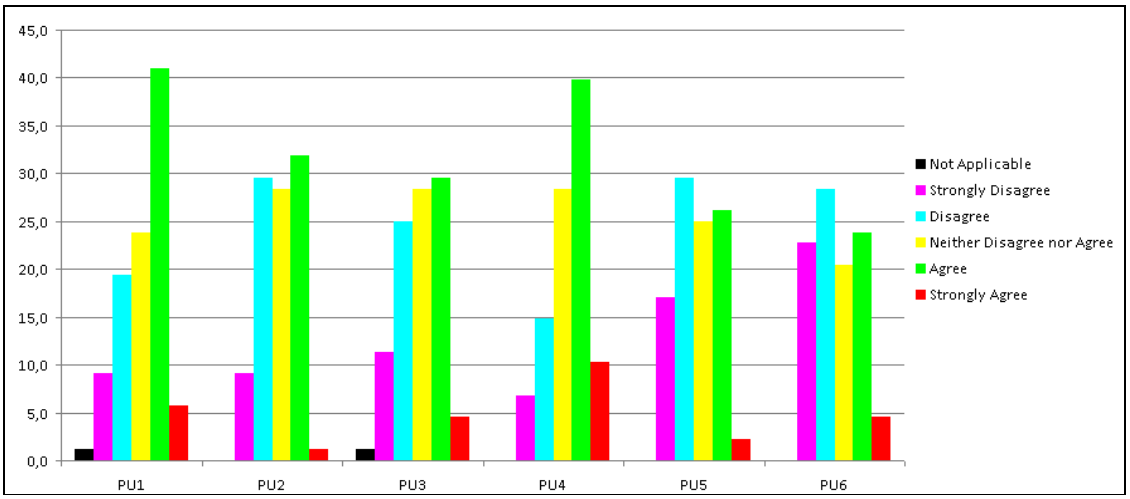

Figure 11 Evaluation of the items in Section 2: Perceived usefulness statements (Group PU).

* **Perceived ease of use evaluation** (see Figure 12) – Section 3 had six items asking to evaluate the perceived ease of use of Acuitas. It is interesting to point out that nobody strongly disagree with the first item (variable PEOU1), stating that it was easy to learn how to use the new system. 29.5% strongly agree and 38.6% agree with the same statement, meaning that 68.1% of the respondents encountered no big issues or barriers in learning how to accomplish their tasks with Acuitas. A higher percentage of participants (42.1%) gave a negative feedback when asked to evaluate if it is always easy to get the application to do what they want to do (variable PEOU2), only the 25% agree and less (8.0%) strongly agree with that. The following two items recorded very high levels of agreement: 43.2% agree and 20.5% strongly agree that it was easy to become skilful in the use of the application (variable PEOU3); 45.5% agree and 18.2% strongly agree that Acuitas is easy to use (variable PEOU4). Similarly 37.5% agree while 17.0% strongly agree that the user's interaction with the application is clear and understandable (variable PEOU5). The last statement gained balanced opinions, as similar percentages (approximately 36.0% each) of respondents agree and did not agree that Acuitas is a flexible system (variable PEOU6).

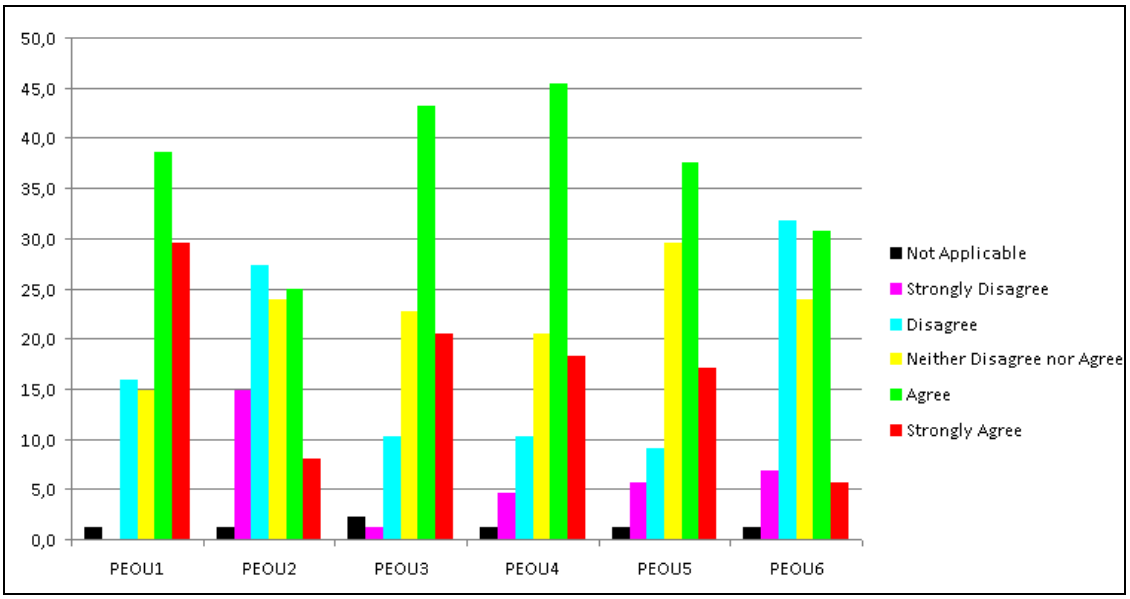

Figure 12 Evaluation of the items in Section 3: Perceived ease of use statements (Group PEOU).

* **Perceived IT performance evaluation** (see Figure 13) – Section 4 had three items asking to evaluate the perceived IT performance of Acuitas, that is its reliability and availability. The majority of the respondents believe that the new system is reliable (variable PIT1) and always available when they need it (variable PIT2). 50.0% of the respondents think that the application is a reliable system, 13.6% in total disagree and strongly disagree with this. 42.0% agree that Acuitas is available when needed, 23.9% in total disagree and strongly disagree with this. The last statement asked to evaluate if it is easy for the users to keep doing their job if technical issues make Acuitas not available (variable PIT3). 23.9% strongly disagree and 25.0% disagree with this, meaning that the application is not easily replaceable if technical problems do not allow accessing it and that it is almost indispensable for the majority of the employees.

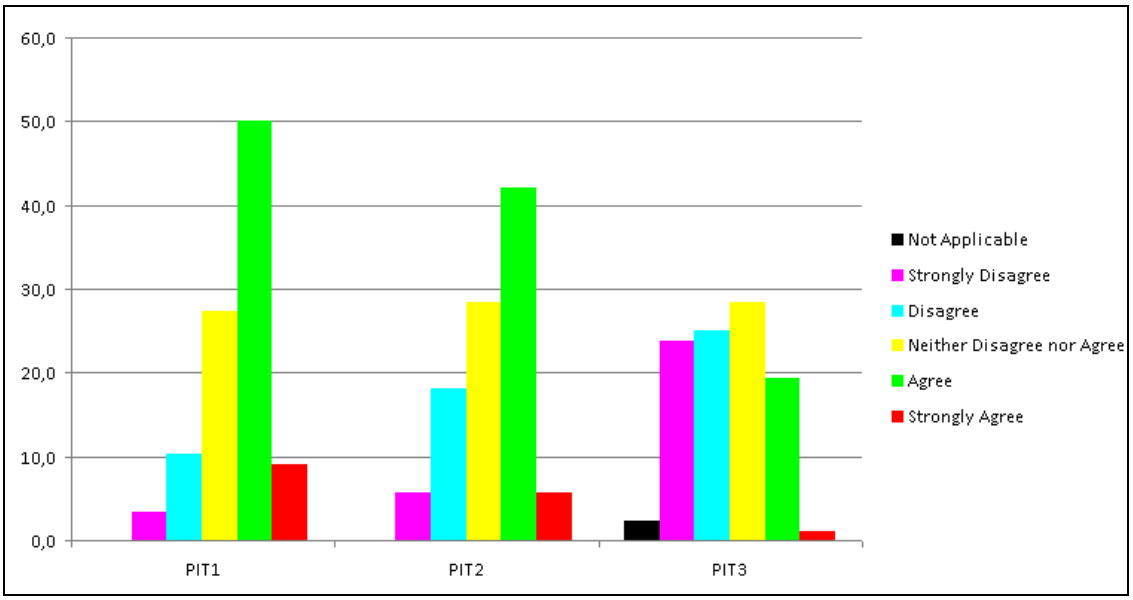

Figure 13 Evaluation of the items in Section 4: Perceived IT performance statements (Group PIT).

* **Perceived received training evaluation** (see Figure 14 and Figure 15) – Section 5 had three items asking to evaluate the multimedia online training and two items asking to evaluate the in-store training on the go-live day. As specified in the previous paragraph, the online training was attended by the 76% of the participants to the survey, while the in-store training was attended by the 87%. About the online training, made available to the stores several weeks before the go-live date, a large majority of respondents agree that it was easy to access (variable RT1), with 73.1% of positive feedback, and easy to understand (variable RT2), with 73.2% of positive feedback. 74.6% believe that the multimedia training gave the users a useful overview of the basic functionalities of the application (variable RT3). Positive evaluations were given by more than half of the respondents for the in-store training as well. 31.2% agree and 27.3% strongly agree that the trainer had covered all the necessary topics for being able to work with the new system the following days (variable RT4), while 22.1% do not agree with this. In general, 40.3% agree and 22.1% strongly agree that they have overall received an exhaustive training on the go-live day (variable RT5), 16.9% do not agree with this statement.

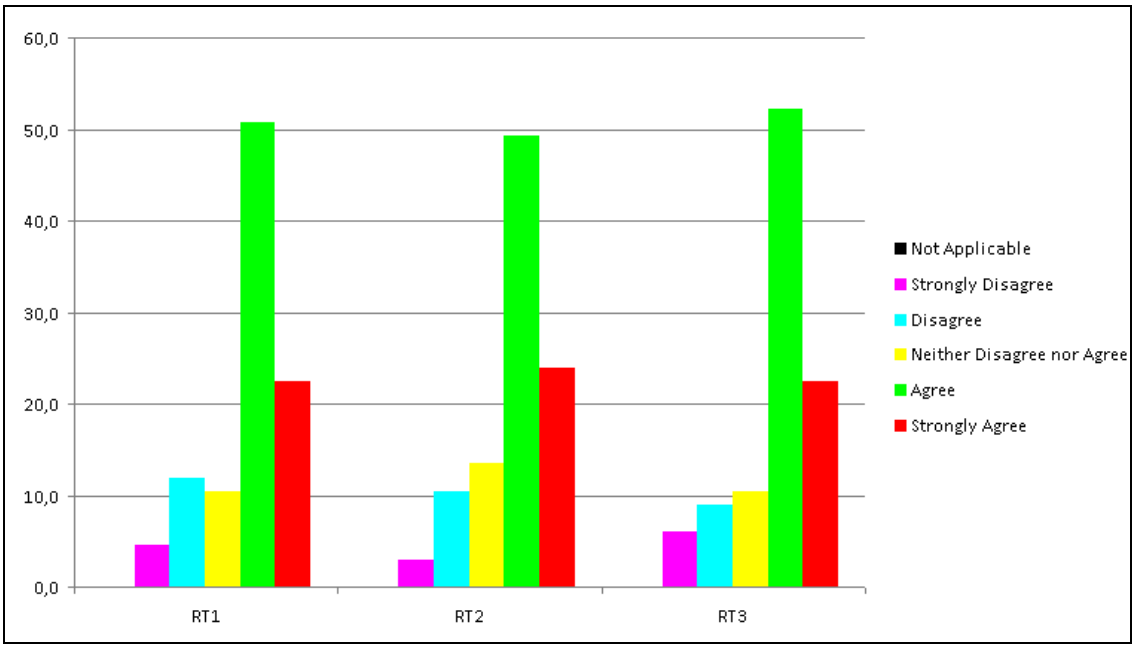

Figure 14 Evaluation of the items in Section 5: Perceived received online multimedia training statements (Group RT).

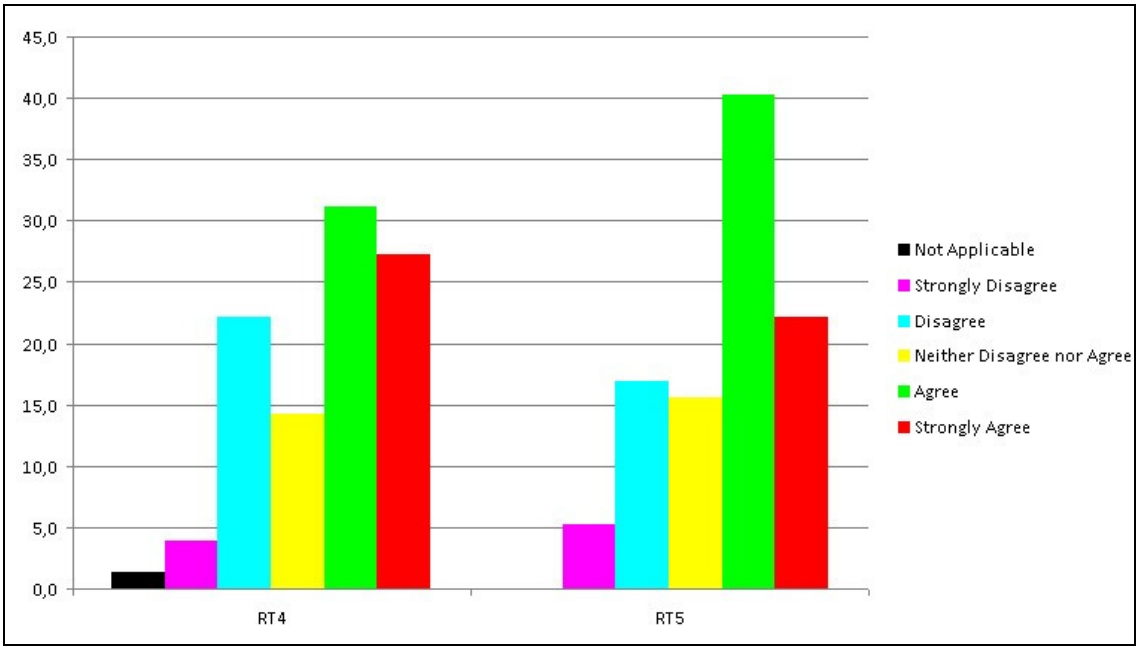

Figure 15 Evaluation of the items in Section 5: Perceived received in-store training statements (Group RT).

* **Other statements evaluation** (see Figure 16) – Section 6 had five items asking to evaluate other statements about two subjective norms (group SN) and three self-confidence (group SC) statements with the new application. The majority of the respondents (39.8%) agree that there is a specific person assisting them if they encounter any difficulties with the system

(variable SN1), while 14.8% do not agree with this. 30.7% strongly agree and 43.2% agree with the second statement, that is the large majority of the participants to the survey believe they are confident enough to work with the new system alone and independently (variable SC1). Nobody strongly disagree with this. The time available to accomplish necessary tasks with the new system (variable SC2) has divided the opinions of the respondents quite evenly (a slight majority is registered by those who disagree with the statement, if those who neither disagree nor agree are excluded). The highest peak of "strongly disagree" (40.9%) has been recorded by the fourth item. Therefore, most of the users do not hesitate to use the application being afraid of making mistakes (variable SC3). 46.6% agree and 13.6% strongly agree that the organization and their superiors support the new system and are willing to help as well (variable SN2).

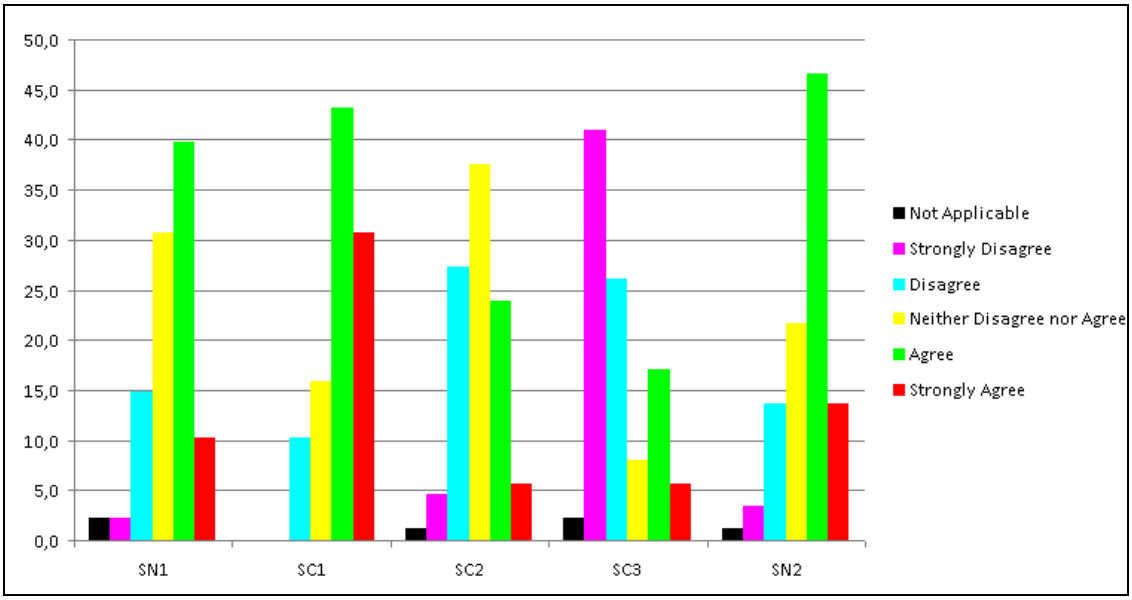

Figure 16 Evaluation of the items in Section 6: Other statements (Group SN and SC).

4.4. Correlation of variables

Before starting to analyse the correlation of variables, two items had to be reversed, that is variables SC2 and SC3, which both had a negative meaning, therefore respondents tended naturally to disagree with them.

In order to reduce the number of factors to build a Pearson's correlation matrix, a principal components analysis (PCA) was used to identify the main constructs underlying technology acceptance. PCA was conducted with orthogonal rotation (Varimax) and following the Kaiser criterion, that is eigenvalues greater than one. This analysis highlighted six components that explained the 74.8% of the total variance. The acceptable meaningful loadings were all

greater than 0.45. In Table 7 the insignificant loadings (less than 0.45) have been removed. Cronbach's Alpha coefficient was then calculated for each new construct.

PCA - Components						
	1	2	3	4	5	6
PU1	.818					
PU2	.880					
PU3	.862					
PU4	.783					
PU5	.841					
PU6	.843					
PEOU1		.855				
PEOU2		.761				
PEOU3		.860				
PEOU4		.756				
PEOU5		.787				
PEOU6		.699				
PIT1				.770		
PIT2				.729		
PIT3				.470		
RT1			.876			
RT2			.944			
RT3			.822			
RT4					.748	
RT5					.740	
SC1					.721	
SC2						.715
SC3						.668
SN1				.679		
SN2					.642	
Cronbach's Alpha	**.955**	**.924**	**.909**	**.617**	**.794**	**.401**

Table 7 PCA with Varimax rotation and Kaiser normalization.

Some of the constructs share the same conceptual meaning well defined by their variables, such as components 1, 2 and 3. Component 1 matches the Perceived Usefulness (PU) group; component 2 matches the Perceived Ease of Use (PEOU) group; component 3 matches the Received Online Training group (RT1, RT2 and RT3).

The other constructs have mixed variables. Specifically, component 4 groups together the perceived IT performance items (PIT) and one item of the subjective norms (SN1). This means that despite there might be technical issues, users know that there is a point of reference for these types of problems (technical helpdesk in their case). Component 5 has been interpreted as the fact that a good training in person on the go-live day (RT4 and RT5)

implies no need of someone assisting the users side by side (SC1 and SN2), because the end users could make questions and they could clarify with the trainer any doubts they had with the new system. Component 6 groups together two of the three self-confidence items (SC2 and SC3). According to this interpretation of the PCA, the components have been re-coded as shown in Table 8.

Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Perceived Usefulness (PU)	Perceived Ease of Use (PEOU)	Received Online Training (ROT)	IT Infrastructure (ITI)	Training and Support (TS)	Self-Confidence (SC)

Table 8 Re-coding of the components found with PCA.

Correlations							
		PU	PEOU	ROT	ITI	TS	SC
PU	Pearson Correlation *r*	1					
	Sig. (2- tailed)						
	N	88					
PEOU	Pearson Correlation *r*	.692**	1				
	Sig. (2- tailed)	.000					
	N	87	87				
ROT	Pearson Correlation *r*	.347**	.472**	1			
	Sig. (2- tailed)	.004	.000				
	N	67	67	67			
ITI	Pearson Correlation *r*	.759**	.614**	.365**	1		
	Sig. (2- tailed)	.000	.000	.002			
	N	88	87	67	88		
TS	Pearson Correlation *r*	.612**	.677**	.453**	.595**	1	
	Sig. (2- tailed)	.000	.000	.000	.000		
	N	88	87	67	88	88	
SC	Pearson Correlation *r*	-.240*	-.394**	-.246*	-.228*	-.324**	1
	Sig. (2- tailed)	.025	.000	.045	.034	.002	
	N	87	86	67	87	87	87

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

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

Green = $r > 0.5$, $r < -0.5$

Yellow = $-0.5 \leq r \leq -0.3$, $0.3 \leq r \leq 0.5$

Red = $-0.3 < r < 0.3$

Table 9 Correlation matrix of the PCA constructs.

The correlation among the components, that is the constructs found with PCA, was calculated using composite scores. Composite scores were found calculating the averaging scores across items weighting on the specific construct (see Table 9).

Correlation was evaluated calculating the Pearson's correlation coefficient (r). This coefficient has a value between –1 and +1, depending if there is a positive or negative correlation. When r is close to 0, it means that there is a weak relationship between the variables. In this study, strong correlation was considered for values of r greater than 0.5 and less than –0.5, medium correlation for those with $0.3 < r < 0.5$ and $–0.5 < r < -0.3$, and weak (insignificant) correlation if $–0.3 < r < 0.3$.

The strongest correlation (r=0.759) was found between PU and ITI. The construct about Self-Confidence (SC) was less correlated with the other constructs, as it had only a mild negative correlation with Perceived Ease of Use (PEOU) and Training and Support (TS).

4.5. Participants' comments overview

As mentioned in the previous chapter, all sections of the survey, but section 1, had a field where participants could enter freely any comments. 26.1% of the participants left a comment to section 2 (perceived usefulness), 11.4% to section 3 (perceived ease of use), 8.0% to section 4 (IT performance), 10.2% to section 5 (received training), nobody commented section 6 about self-confidence and subjective norms.

Some recurring topics written in the comments can be detected across the different sections. The researcher could distinguish negative feedback (criticisms / complaints) and positive feedback (appreciations) to the system. These are summarized in Table 10.

It is interesting to point out that some comments are not strictly related to the section where they were written into. Also, negative feedback is more frequent than positive feedback.

As displayed in Table 10, the majority of those who left a comment reported that some procedures became more complex or longer compared with the system which was replaced by Acuitas. This may be interpreted as commenting on:

- The perceived usefulness, with the perception that the software is less effective because it takes longer to complete some tasks;
- The perceived ease of use, with respondents reporting greater difficulty in accomplishing what needs to be done;
- The training attended, with respondents experiencing inadequate explanation.

The system requiring entering the password (PIN) too many times is also criticized. This is linked to slow down most of the procedures in the stores and to users' annoyance.

8 participants commented that the fact that users cannot modify a work order with the new system is a defect that needs to be addressed. All these 8 comments were left in section 2, and this could be interpreted as the lack of this specific functionality weakens the perceived usefulness of the entire application.

		Section 2 (PU)	**Section 3 (PEOU)**	**Section 4 (PIT)**	**Section 5 (RT)**	**Feedback frequency**
Negative Feedback	Some procedures are too long or complex	8	5	--	3	16
	PIN is requested too many times	7	1	--	1	9
	Cannot modify the WO	8	--	--	--	8
	Cannot review the history of a product	4	1	--	--	5
	Receipt printer issues	--	--	3	--	3
	Infrastructure issues (such as server down)	--	--	2	--	2
	Helpdesk not available immediately when needed	--	--	--	1	1
	Training too concentrated in a short time	--	--	--	1	1
Positive Feedback	Some procedures are easier	1	3	--	--	4
	Application is more effective	3	--	--	--	3
	Application is more targeted to optical stores	2	--	--	--	2
	Application is more secure	1	--	--	--	1
	Can access customers' data across multiple stores	1	--	--	--	1

Table 10 Summary of the end users' feedback left in the comments for each section.

Two specific technical issues were also reported, that is a server machine frequently down and unavailable, making the application inaccessible, and a problem with a link between the application and the receipt printer.

On the other hand, other users recognized that some procedures became easier with the new system, by comparing them with those of the previous system.

It was also specified that Acuitas is more effective, secure and targeted to an optical retail organization as well. Brand-new functionalities, such as the capability to access customers' data across different stores, were also appreciated.

5.Discussion

In the following chapter, the results of this study will be presented and discussed. Some limitations have to be acknowledged as well and some recommendations for future research will be suggested.

5.1. Summary of the analysis

Even if many studies about the barriers to technology adoption are found in literature and they all range over a wide variety of fields, no specific works of research on the acceptance of a new system have been detected in the optical retail industry, neither conducted in Italy nor in other countries, to the best of the author's knowledge. For this reason, it has not been possible to make direct comparisons with other studies in the optical retail field, although similarities with other studies conducted in different fields have been found, leading to general conclusions that can be extended to other domains.

This work is on the line with other studies that are based on models of technology acceptance, such as those presented in the literature review (f.e. (Venkatesh et al. 2003)). In fact, this study has a high explanatory capacity too, explaining over the 70% of the variance in the acceptance analysis.

The scales used in this study had good psychometric characteristics. Principal component analysis showed some patterns of constructs already well supported in previous studies, such as the main Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), which are the core items of the Technology Acceptance Model.

Other patterns were recognized by the researcher, such as those strictly related to the specific type of training offered to the end-users who took part to this research (multimedia training and/or in-store training). It must be also pointed out that the items of the questionnaire related to the different types of training were introduced by the author of this research and are not found in previous TAM-related literature. Additional effort has been made in order to test these brand-new constructs related to different types of facilitating conditions.

Other components had not strict boundaries, such as the component about IT Infrastructure (ITI) and Training and Support (TS). This could be caused by a partial comprehension of the questions referred to Subjective Norms (SN1 and SN2), that were translated into Italian and might not be clear enough to the participants to the survey.

As observed in other studies and again on the line with other papers, the constructs about Perceived Usefulness and Perceived Ease of Use of Acuitas are strongly correlated one to each other in this research too (r=0.692). Both these two components are correlated to the received training, whether it is an online training or a taught training with a specific person in the store. Moreover, they are correlated to the perceived reliability of the technological infrastructure, which includes its technical support (i.e. helpdesk) and the point of reference inside the organization.

Despite the use of free comments has not been detected in previous studies, they were found particularly useful in this research to identify what were the main concerns and appreciations of some end-users.

Free comments were highly informative under this point of view. It must be taken into consideration that sometimes it is not easy to identify whether participants tend to disagree because they disagree with the item itself or if they are negative towards the object of the survey (Cacciola, Marradi 1988).

In this study, for example, negative comments could partially explain the lower mean for some items. For example, 16 people commented explicitly that procedures with the application became too long and complex. This could partially explain the low average scores for items such as "Using Acuitas has made easier to do my job" (μ=2.67) and "Using Acuitas in my job enabled me to accomplish tasks more quickly" (μ=2.60). In this case, focusing on simplifying procedures could improve the perceived usefulness of the application, and the user's acceptance too.

5.2. Limitations and future recommendations

This research showed some limitations that will be identified and explained in this paragraph.

First of all, it must be taken into account the low response rate of participants (approximately 5%) in a 5 weeks period, even though their stores of origin represent more than the 16% of all the stores. No reminders were sent out to the stores to push the employees to take part into the online survey and it was not possible to postpone the deadline further on.

With hindsight, questions about the attendance of both types of training might have given more information if reworded. For example, having asked how much online multimedia training they had attended (in full, partially, not at all), instead of having asked simply if they had attended it or not, could have given a better insight of the impact of the training on the other factors.

It must be acknowledged that during the time the survey was available online, some updates to the software were pushed to the stores. These updates were minor modifications and bugs fixes that have not affected the work procedures of the employees.

From the comments, it can be gathered that still a strong legacy from the previous system is in place, as all the comparative comments ("easier", "more secure", "more complex", etc…) were referring to the previous application in use in the stores. This legacy factor was not taken into account when creating the questionnaire for this research and this might have caused some degrees of distortion.

From this piece of work, some components can be taken and included in future researches, such as the constructs about one type of training or another mentioned in the previous paragraph. Moreover, some other learnt aspects lead to suggestions for future projects in the field of technology acceptance.

This work was a single study which did not allow comparing the users' reactions to the new application before and after its installation. In the future, it could be useful to conduct a longitudinal study, taking a picture of the users' acceptance at different stages of the adoption of the software (for example: piloting stage, on the first day of use, after one month, after six months, etc…). In this way it could be possible to identify if there are any common changes or trends of the users' acceptance. The temporal aspect for acceptance testing could also investigate how the users' acceptance changes before and after different upgrades of the application.

A possibility that Ocuco Ltd. would have, and that could be followed by other researchers too, is to investigate the adoption of the software across different countries (Im, Hong & Kang 2011). This may lead to identifying if there are any potential cultural barriers to the adoption of a system, always keeping in mind what are the specific requirements for each market even if they belong to the same domain.

6.Conclusions

The adoption of a new information technology, such as a piece of software or an entire infrastructure often requires its end users to acquire the necessary expertise in a short time. However, the development of familiarity with and mastery of new interfaces and systems can only take place with exposure and practice over time. The time needed for such learning may not correspond with the time allocated to the innovation or implementation process.

Consequently, there are delays and inefficiencies in using a new technology. This may bring the end users to lack of self-confidence in using the application, increasing potential errors and sometimes frustration when using it.

Technologies are often intended to increase the flexibility of the organization. They are put in place to speed up work processes, aiming to facilitate access to and understanding of information and to enable and assist ease and speed of learning.

On the other side, new technologies can introduce factors of rigidity. These factors give the end users a reason to criticize the introduction of new systems in a negative way, especially when the adoption process requires them high efforts to adapt to technologies and infrastructures.

In some cases, as it happened for the optical retail chain S&V with Acuitas, the pure Technology Acceptance Model could not be enough to explain all the variables affecting the users' acceptance. The model shall also take into account that the use of the system is however forced by the management. This implies the introduction of new additional variables that are not part of the core model in order to evaluate the level of technology acceptance of the end users.

In the specific case for this research, the end users had no choice, as the software adoption was forced by their organization. And they had to co-operate with it in order to keep doing their job and accomplish their daily tasks and daily routine.

The online training available in advance for the employees and the intensive training on the go-live day with a dedicated trainer can be a decisive factor in helping the end users to learn how to use a technology. Also, if the quality and effectiveness of the training could be maximised, the perceived usefulness and ease of use of a technology would increase. A better understanding of the technology would decrease the risk of frustration for the users, that is what affects their perception of usefulness and ease of use mostly.

New work procedures could be perceived as more complex and less flexible if the training is not effective, so that the users' approach to the system results in being more negative and reluctant.

As already introduced by Ajzen and Fishbein in 1980, subjective norms can improve the representation of the users' voluntariness in accepting a new technology in a context of forced adoption. The users' attitude could be more positive, perceiving the support of the organization, the top management and the direct superiors. Users also appreciate having a point of reference easily traceable and available in case of need anytime, such as a dedicated and reliable technical helpdesk.

The coherence of the technology with the work-related processes seems to be a crucial point in determine the success of a system. However, processes may change from time to time; therefore a new opportunity of research could evaluate how the technology would adapt itself to the processes to maintain this coherence.

The impact of a new technology on work productivity should bring an improvement of quality in the daily work routine. This in turn leads to increased satisfaction of the end users as a result of the changes. This means that technologies and their use must be considered as a support tool for the users. Rather than imposing enforced changes on workers, technologies should help to increase workers' awareness of work processes and activities, lead to a sense of achievement in implementing and adopting the new technology and to improved job satisfaction.

Bibliography

Agarwal, R. & Prasad, J. 1999, "Are Individual Differences Germane to the Acceptance of New Information Technologies?", *Decision Sciences,* vol. 30, no. 2, pp. 361-391.

Ajzen, I. & Fishbein, M. 1980, *Understanding Attitudes and Predicting Social Behavior,* Prentice Hall.

Austin, D., Pier, C., Mitchell, J., Schattner, P., Wade, V., Pierce, D. & Klein, B. 2006, "Do GPs use electronic mental health resources? - a qualitative study", *Australian Family Physician,* vol. 35, no. 5, pp. 365-366.

Baily, M.N. & Lawrence, R. 2001, *Do We Have A New E-Conomy?*, National Bureau of Economic Research.

Bandura, A. 1982, "Self-efficacy mechanism in human agency", *American Psychologist,* vol. 37, no. 2, pp. 122-147.

Barki, H. & Hartwick, J. 1994, "User participation, conflict, and conflict resolution: The mediation roles of influence", *Information Systems Research,* vol. 5, no. 4, pp. 422-438.

Boddy, D. & Buchanan, D.A. 1986, *Managing New Technology,* Basil Blackwell, Oxford, UK.

Boland, J.,R.J. 1986, "Phenomenology: a preferred approach to research on information systems" in North-Holland Publishing Co, Amsterdam, The Netherlands, The Netherlands, pp. 341-349.

Brynjolfsson, E. 1993, "The productivity paradox of information technology", *Commun.ACM,* vol. 36, no. 12, pp. 66-77.

Cacciola, S. & Marradi, A. 1988, "Contributo al dibattito sulle scale Likert basato sull'analisi di interviste registrate" in *Costruire il dato: sulle techniche de raccolta delle informazioni nelle scienze sociali*, ed. A. Marradi, F. Angeli, , pp. 63-102.

Chadwick, D.W., Mundy, D. & New, J. 2003, "Experiences of using a PKI to access a hospital information system by high street opticians", *Computer Communications,* vol. 26, no. 16, pp. 1893-1903.

Chismar, W.G. & Wiley-Patton, S. 2002, "Test of the technology acceptance model for the internet in pediatrics", *Proceedings / AMIA ...Annual Symposium.AMIA Symposium,* , pp. 155-159.

Corti, E. 2002, *Gestione dell'Innovazione: la Piccola Impresa Innovativa,* Edizioni Scientifiche Italiane, Napoli.

Cosmi, L. 2003, "Razionalità dei processi di diffusione nei sistemi aziendali di tecnologia sanitaria innovativa. Un modello delle variabili 'non convenzionali'. ", Atti del Convegno AIES, Rome, 30-31/10/2003.

Darren George & Mallery, P. 2003, *SPSS for Windows step by step: a simple guide and reference, 11.0 update,* Allyn and Bacon.

Davis, F. 1989, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology", *MIS Quarterly,* , pp. 319-339.

Davis, F.D. 1993, "User acceptance of information technology: system characteristics, user perceptions and behavioral impacts", *Int.J.Man-Mach.Stud.,* vol. 38, no. 3, pp. 475-487.

Davis, F.D. 1986, *A technology acceptance model for empirically testing new end-user information systems: theory and results*, Sloan School of Management edn, Massachusetts Institute of Technology, Cambridge, MA.

Gagnon, M.P., Godin, G., Gagne, C., Fortin, J.P., Lamothe, L., Reinharz, D. & Cloutier, A. 2003, "An adaptation of the theory of interpersonal behaviour to the study of telemedicine adoption by physicians", *International journal of medical informatics,* vol. 71, no. 2-3, pp. 103-115.

Galbraith, J.R. 1973, *Designing Complex Organizations,* 1st edn, Addison-Wesley Longman Publishing Co., Inc, Boston, MA, USA.

Goodhue, D.L. & Thompson, R.L. 1995, "Task-technology fit and individual performance", *MIS Q.,* vol. 19, no. 2, pp. 213-236.

Hao Tian, Dongsheng Liu, Jianming Lin & Yongqin Jin 2010, "What Drives Mobile Office Service? A Revised Technology Acceptance Model Based on the Characteristics of Wireless Mobile Office Technology", *Information Science and Management Engineering (ISME), 2010 International Conference of*, pp. 166.

Hennington, A. & Janz, B.D. 2007, "Information Systems and Healthcare XVI: Physician Adoption of Electronic Medical Records: Applying the UTAUT Model in a Healthcare Context", *Communications of the Association for Information Systems,* vol. 19, no. 5, pp. 60-80.

Holden, R.J. & Karsh, B. 2010, "The Technology Acceptance Model: Its past and its future in health care", *Journal of Biomedical Informatics,* vol. 43, no. 1, pp. 159-172.

Im, I., Hong, S. & Kang, M.S. 2011, "An international comparison of technology adoption: Testing the UTAUT model", *Information & Management,* vol. 48, no. 1, pp. 1-8.

Kassirer, J.P. 2000, "Patients, physicians, and the Internet", *Health affairs (Project Hope),* vol. 19, no. 6, pp. 115-123.

Kim, T.G., Lee, J.H. & Law, R. 2008, "An empirical examination of the acceptance behaviour of hotel front office systems: An extended technology acceptance model", *Tourism Management,* vol. 29, no. 3, pp. 500-513.

King, W.R. & He, J. 2006, "A meta-analysis of the technology acceptance model", *Information & Management,* vol. 43, no. 6, pp. 740-755.

Laudon, K. & Laudon, J. 1998, *Management Information Systems: New Approaches to Organization and Technology,* 5th Edition edn, Prentice Hall, Upper Saddle River, N.J.

Lederer, A.L., Maupin, D.J., Sena, M.P. & Zhuang, Y. 2000, "The technology acceptance model and the World Wide Web", *Decision Support Systems,* vol. 29, no. 3, pp. 269-282.

Moore, G.C. & Benbasat, I. 1991, "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation", *Information Systems Research,* vol. 2, no. 3, pp. 192-222.

Pfeffer, J. 1982, "Organizations and organization theory", .

Pontiggia, A. 1997, *Organizzazione dei sistemi informativi. Modelli per l'analisi e per la progettazione.* Etaslibri, Milano.

Pontiggia, A. & Virili, F. 2010, "Network effects in technology acceptance: Laboratory experimental evidence", *International Journal of Information Management,* vol. 30, no. 1, pp. 68-77.

Powell, T.C. & Dent-Micallef, A. 1997, "Information technology as competitive advantage: the role of human, business, and technology resources", *Strategic Management Journal,* vol. 18, no. 5, pp. 375-405.

Robey, D. 1979, "User Attitudes and Management Information System Use", *The Academy of Management Journal,* vol. 22, no. 3, pp. pp. 527-538.

Rogers, E.M. 1983, *Diffusion of innovations,* Free Press ; Collier Macmillan, New York; London.

Schaper, L.K. & Pervan, G.P. 2007, "ICT and OTs: A model of information and communication technology acceptance and utilisation by occupational therapists", *International journal of medical informatics,* vol. 76, no. Supplement 1, pp. S212-S221.

Schultz, R.L. & Slevin, D.P. 1975, "Implementation and organizational validity: an empirical investigation" in *Implementing operations research management science*, eds. R.L. Schultz & D.P. Slevin, American Elsevier, New York, pp. 153.

Strassman, P.A. (ed) 1985, *Information Payoff: The Transformation of Work in the Electronic Age*, The Free Press, New York.

Swanson, E.B. 1982, "Measuring user attitudes in MIS research: a review", *Omega,* vol. 10, no. 2, pp. 157-165.

The technology atlas team 1987, "A framework for technology based national planning", *Technological Forecasting and Social Change,* vol. 32, no. 1, pp. 5-18.

Tornatzky, L.G. & Klein, K.J. 1982, "Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings", *IEEE Transactions on Engineering Management,* vol. 29, no. 1, pp. 28-45.

Tushman, M.L. & Nadler, D.A. 1978, "Information Processing as an Integrating Concept in Organizational Design", *The Academy of Management Review,* vol. 3, no. 3, pp. pp. 613-624.

Venkatesh, V. & Davis, F. 2000, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies", *Management Science,* vol. 46, no. 2, pp. 186-204.

Venkatesh, V., Morris, M.G., Gordon B. Davis & Davis, F.D. 2003, "User Acceptance of Information Technology: Toward a Unified View", *MIS Quarterly,* vol. 27, no. 3, pp. pp. 425-478.

Venkatraman, N. 1991, "IT-induced Business Reconfiguration" in *The Corporation of the 1990s*, ed. M.S. Scott Morton, Oxford University Press, New York.

Weick, K. 1990, "Technology as equivoque: Sensemaking in new technologies." in *Technology and organizations*, ed. P. Goodman, Jossey Bass, San Francisco, pp. 1-44.

Yi, M.Y., Jackson, J.D., Park, J.S. & Probst, J.C. 2006, "Understanding information technology acceptance by individual professionals: toward an integrative view", *Inf.Manage.,* vol. 43, no. 3, pp. 350-363.

Appendix 1 – Cover Letter (English version)

Users' Acceptance of the New Information System Acuitas in S&V Stores

BACKGROUND OF RESEARCH: The purpose of this study is to investigate the Perceived Ease of Use, Perceived Usefulness and User Acceptance among the end users of the information system named “Acuitas”, installed in Salmoiraghi&Vigano' (S&V) stores.

OBJECTIVES OF THE RESEARCH: This study is conducted by Paola Bonizzato, attending the MSc in Health Informatics at Trinity College in Dublin (Ireland). The scope of this study is to investigate the perceive ease of use and perceived usefulness of the end users of the software Acuitas, installed in S&V stores between June 2010 and December 2010. The tentative title for this research is “A new application introduced in an optical retail chain: what are the key barriers to the users acceptance of the new system?”.

PROCEDURES OF THIS STUDY: You are asked to take part into an online survey, which will take 15 minutes to complete. The survey includes questions about your perception in using the software “Acuitas”, chosen by S&V as the new information system for all the stores of its optical retail chain. We also will ask for some demographic information (e.g., age, education level, etc.) so that we can accurately describe the general traits of the group of people who participate in the study. Other questions will determine your level of IT skills and your level of engagement with "Acuitas". In order not to take too much of your time, no open-ended questions have been included. However, at the end of each section you have the option of sending me your comments, which I would highly appreciate.

BENEFITS OF THIS STUDY: You will be contributing to knowledge about the main barriers to the adoption of a new information system. More precisely, such as in the case that an application is installed in a large optical retail environment, involving more than 1200 users. After we have finished data collection and analysed the data submitted by you, the researcher also will provide S&V with the summary of the main research findings.

RISKS OR DISCOMFORTS: No risks or discomforts are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip that question and move on to the next one or withdraw from the study altogether. If you decide to quit at any time before you have finished the questionnaire, your answers will not be recorded.

PRIVACY: You answers will be collected and filed in respect of privacy and confidentiality. You will not be asked to indicate your last name or first name, so that it will not be possible to trace back to your identity starting from the given answers. Only the researcher can view each answer to the survey sent by the participants. Any comments left in the appropriate fields could be cited in the dissertation if considered useful for the study. Anyway, comments will not be linked to any other details, such as names or identification numbers.

DECISION TO ABANDON THE STUDY: Participation to this study is on a volunteer basis. You are free to withdraw your participation from this study at any time. If you do not wish to continue, you can simply close your browser page. If you do not click on the 'Submit / Invia' button at the bottom of the survey, your answers and your participation will not be submitted and recorded. You can also answer partially to the survey, leaving blank those replies you do not wish to answer to.

HOW THE FINDINGS WILL BE USED: The information contained within this survey will be used solely and exclusively for the purpose of fulfilling the requirements of completing this research thesis. The results from the study might be presented in educational settings and at professional conferences, and the results might be published in a professional journal in the field of IT. Individual results will be aggregated anonymously and research reported on aggregate results.

By starting the questionnaire you confirm that you have read this informative page and that you agree to take part into this survey. You also confirm that you are aware that you can abandon the survey anytime with no penalties. If you wish to continue, click on the 'Continue / Continua' button. If you do not wish to continue, simply close this browser page.

RESEARCHERS CONTACT DETAILS: bonizzap@tcd.ie

IF YOU DO NOT WISH TO CONTINUE WITH THE SURVEY, PLEASE CLOSE THIS PAGE.

Appendix 2 - Online Questionnaire (English version)

Section 1: Demographics and background

1.1 Indicate your gender

- Male
- Female

1.2 Indicate your age

- < 20
- 20-29
- 30-39
- 40-49
- 50-59
- > 60

1.3 Indicate the highest level qualification you currently hold

- High School degree
- Bachelor's degree
- Master's degree
- PhD
- Other:

1.4 Indicate the number of year you work in the optical retail system

- o < 5 years
- o 5-10 years
- o 10-15 years
- o 15-20 years
- o 20-25 years
- o > 25 years

1.5 What part/parts of Acuitas do you use? (Tick all that apply)

- ☐ Customers' management (personal data, prescriptions, Work Orders creation…)
- ☐ Back office (reports, bank deposits, till shifts…)
- ☐ Stock management (stock orders, stock transfers, stock takes…)
- ☐ Work list (reprint invoices, reprint return receipts, cancel dispenses, check sales history)
- ☐ Till (dispensing, deposit collection, modify WOs, WO collection, end of day/close till procedure)
- ☐ Other: _____

1.6 Thinking about your average day of work, indicate how many hours you use Acuitas daily

- o < 2 hours
- o 2-4 hours
- o 4-6 hours
- o 6-8 hours

Section 2: Perceived usefulness statements

Perceived Usefulness Statements

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
Using Acuitas has improved my performance in doing my job					
Using Acuitas at work has improved my productivity					
Using Acuitas has enhanced my effectiveness in my job					
I find Acuitas useful in my job					
Using Acuitas has made easier to do my job					
Using Acuitas in my job enabled me to accomplish tasks more quickly					

If you wish to make any comments in relation to this section, please use the space in the paragraph below.

Section 3: Perceived ease of use statements

Perceived Ease of Use Statements

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
Learning to operate Acuitas was easy for me					
I find it easy to get Acuitas to do what I want it to do					
It was easy for me to become skilful in the use of Acuitas					
I find Acuitas easy to use					
My interaction with Acuitas is clear and understandable					
I find Acuitas to be flexible to interact with					

If you wish to make any comments in relation to this section, please use the space in the paragraph below.

Section 4: Perceived IT performance statements

Perceived IT performance statements

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
I think that Acuitas is a reliable system					
Acuitas is always available when I need it					
It is easy for me to do my job when Acuitas is not available due to technical issues					

If you wish to make any comments in relation to this section, please use the space in the paragraph below.

Section 5: Received training statements

5.1 I have attended the multimedia training online

- Yes
- No

Received multimedia training statements

(Please answer this question only if you replied with yes to the previous question "I have attended the multimedia training online")

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
The multimedia training was easily accessible					
The multimedia training was easy to understand					
The multimedia training has been useful to understand the basic functionalities of Acuitas					

5.2 I have attended the training in person on the go live day

- Yes
- No

Received training in person on the go live day statements

(Please answer this question only if you replied with yes to the previous question "I have attended the training in person on the go live day")

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
The training in person on the go live day has covered all the topics I needed to work with Acuitas independently					
I have been well overall trained in the use of Acuitas					

5.3 In the last 4 weeks, I have contacted the technical helpdesk

- 1-2 times
- 3-4 times
- 5-6 times
- >6 times
- Never

If you wish to make any comments in relation to this section, please use the space in the paragraph below.

Section 6: Other statements

Perceived Ease of Use Statements

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
A specific person is available to assist if there are difficulties with the system					
I think I can accomplish my tasks with Acuitas even if there is nobody who can help me nearby					
I think I can accomplish my tasks with Acuitas if I have lot of time available					
I hesitate to use Acuitas as I am afraid to make mistakes that I cannot correct / change					
My interaction with Acuitas is clear and understandable					
My superiors and my organization support Acuitas and help with it					

If you wish to make any comments in relation to this section, please use the space in the paragraph below.

Appendix 3 – Cover Letter as published on GoogleDocs (Italian version)

QUESTIONARIO SULL'ACCETTAZIONE DI ACUITAS DA PARTE DEGLI UTENTI NEI NEGOZI S&V

PAGINA INFORMATIVA PER I PARTECIPANTI ALLO STUDIO

Uno studio sulla percezione di facilita' d'uso e percezione di utilita' e sull'accettazione da parte dell'utente del nuovo sistema Acuitas tra i dipendenti di Salmoiraghi&Vigano' (di seguito S&V).

Scopo dello studio:
Questo studio e' condotto da Paola Bonizzato, che frequenta il Master in Informatica Medica presso il Trinity College di Dublino (Irlanda). Lo scopo di questo studio e' quello di indagare la facilita' d'uso e l'utilita' percepite, nonche' l'accettazione, da parte degli utenti finali del sistema Acuitas, installato nei negozi S&V tra giugno 2010 e dicembre 2010. Il titolo provvisorio della tesi e': "Un caso di studio di un nuovo applicativo per una catena di negozi di ottica: quali sono le barriere principali all'accettazione del sistema da parte degli utenti?".

Cosa e' richiesto:
Le viene richiesto di completare un questionario, che richiede circa 15 minuti del Suo tempo. Le domande sono principalmente mirate sulla Sua percezione nell'utilizzo di Acuitas, scelto da S&V come nuovo applicativo per tutti i negozi della catena. Le saranno richiesti anche alcuni dati demografici (per esempio: eta', titolo di studio...), in modo da poter descrivere con piu' precisione il gruppo di partecipanti a questo studio.

Benefici di questo studio:
Le Sue risposte contribuiranno a individuare le principali barriere all'utilizzo di un nuovo sistema informativo. Nello specifico, nel caso in cui l'applicativo sia installato su larga scala e coinvolga piu' di 1200 utenti finali. Alla fine dello studio, i dati raccolti verranno analizzati e un sommario dei risultati della ricerca verra' reso noto a S&V.

Potenziali rischi:
Non sono previsti rischi o malesseri di alcun tipo nel prendere parte a questo studio. Se non desidera rispondere a una domanda, puo' semplicemente saltarla e passare a quelle successive, oppure puo' decidere di interrompere la Sua partecipazione al questionario e non inviare alcuna risposta. Se decide di abbandonare la pagina del questionario, nessuna risposta verra' registrata e inviata all'intestataria di questa ricerca.

Riservatezza:
Le Sue risposte saranno conservate nel rispetto della privacy e riservatezza. Non Le sara' richiesto di indicare il Suo nome e cognome, percio' non sara' possibile in alcun modo risalire alla Sua identita' a partire dalle risposte date. Solo l'intestataria della ricerca potra' visualizzare le singole risposte al questionario inviate dai partecipanti.

Gli eventuali commenti lasciati negli spazi appositi del questionario potranno essere citati nella tesi se ritenuti di particolare rilevanza per lo studio. Ad ogni modo, le citazioni non saranno associate ad alcun nome o matricola.

Decisione di abbandonare lo studio:
La partecipazione a questo studio e' su base volontaria; si e' liberi di non proseguire in qualsiasi momento. Se non vuole continuare, puo' semplicemente chiudere la pagina del browser. Se non clicca sul pulsante Submit / Invia alla fine del questionario, le Sue risposte e la Sua partecipazione non verranno registrate. Puo' decidere di rispondere anche solo parzialmente al questionario, lasciando in bianco le risposte alle quali non desidera rispondere.

Come saranno utilizzate le risposte al questionario:
Le informazioni che emergeranno da questo questionario verranno usate solamente ed esclusivamente per concludere il lavoro di tesi. I risultati della ricerca potrebbero essere presentati in ambienti professionali e accademici, ed eventualmente pubblicati su riviste scientifiche nel campo dell'Information Technology (IT).

Iniziando il questionario, si conferma di aver letto questa pagina informativa e si aderisce a partecipare alla ricerca, sapendo che e' possibile abbandonarlo in qualsiasi momento senza alcuna penalizzazione.

Se desidera proseguire, clicchi sul bottone Continue / Continua. Se non desidera proseguire, chiudia semplicemente la pagina del browser.

Continua »

Appendix 4 - Online Questionnaire as published on GoogleDocs (Italian version)

Sezione 1: Dati demografici e generali sull'uso di Acuitas

Numero Dipendenza Negozio

1.1 Sesso

- ◯ Uomo
- ◯ Donna

1.2 Età

- ◯ < 20 anni
- ◯ 20-29 anni
- ◯ 30-39 anni
- ◯ 40-49 anni
- ◯ 50-59 anni
- ◯ > 60 anni

1.3 Ultimo titolo di studio conseguito

- ◯ Diploma di Scuola Media Inferiore
- ◯ Diploma di Scuola Media Superiore
- ◯ Laurea Breve / Triennale Nuovo Ordinamento
- ◯ Laurea Magistrale / Vecchio Ordinamento
- ◯ Dottorato
- ◯ Altro:

1.4 Da quanti anni lavora nel campo dell'ottica?

- ◯ < 5 anni
- ◯ 5-10 anni
- ◯ 10-15 anni
- ◯ 15-20 anni
- ◯ 20-25 anni
- ◯ >25 anni

1.5 Quali parti di Acuitas utilizza maggiormente? (Più risposte possibili)

- ☐ Gestione Clienti (dati del cliente, prescrizioni, creazione WO, resi / prendi-rendi...)
- ☐ Back office (reportistica, registrazione depositi in banca, consultazione turni di cassa...)
- ☐ Prodotto (gestione magazzino, PD, ordini da WO, carico bolle, inventario, controllo giacenze...)
- ☐ Elenchi Lavori (ristampa fatture e resi, consultazione storico vendite, annullo vendite...)
- ☐ Cassa (vendite veloce, caparre, ritiro WO, chiusura di turno cassa...)
- ☐ Altro:

1.6 In base alla Sua giornata media di lavoro, indichi quante ore utilizza Acuitas quotidianamente

- ◯ < 2 ore
- ◯ 2-4 ore
- ◯ 4-6 ore
- ◯ 6-8 ore

Sezione 2: Utilità di Acuitas percecipita dall'utente

Utilità di Acuitas percecipita dall'utente
(Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
Penso che con Acuitas si lavori meglio	◯	◯	◯	◯	◯
Penso che con Acuitas il mio lavoro sia più produttivo (svolgimento del compito con le minori risorse possibili)	◯	◯	◯	◯	◯
Penso che con Acuitas il mio lavoro sia più efficace	◯	◯	◯	◯	◯
Trovo Acuitas utile per il mio lavoro	◯	◯	◯	◯	◯
L'utilizzo di Acuitas ha reso il mio lavoro più facile	◯	◯	◯	◯	◯
L'utilizzo di Acuitas mi ha permesso di assolvere i miei doveri sul lavoro più velocemente	◯	◯	◯	◯	◯

Se desidera aggiungere un commento alla sezione 2, utilizzi lo spazio sottostante:

Sezione 3: Facilità di utilizzo di Acuitas percepita dall'utente

Facilità di utilizzo di Acuitas percepita dall'utente
(Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
Imparare a utilizzare Acuitas è stato facile per me	○	○	○	○	○
Penso sia facile riuscire a far fare ad Acuitas quello che voglio	○	○	○	○	○
É stato facile per me diventare abile con Acuitas	○	○	○	○	○
Penso che Acuitas sia facile da usare	○	○	○	○	○
Interagisco con Acuitas in maniera chiara e comprensibile	○	○	○	○	○
Penso che l'interazione con Acuitas sia piuttosto flessibile	○	○	○	○	○

Se desidera aggiungere un commento alla sezione 3, utilizzi lo spazio sottostante:

Sezione 4: Performance della tecnologia percepita dall'utente

Performance della tecnologia percepita dall'utente
(Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
Penso che Acuitas sia un sistema affidabile	○	○	○	○	○
Acuitas è sempre disponibile quando ne ho bisogno	○	○	○	○	○
Mi è facile portare avanti il mio lavoro se, per problemi tecnici, Acuitas non è disponibile	○	○	○	○	○

Se desidera aggiungere un commento alla sezione 4, utilizzi lo spazio sottostante:

Sezione 5: Valutazione del training e supporto

5.1 Ho seguito la formazione online (video multimediali)

- ◯ Sì
- ◯ No

Valutazione della formazione multimediale su Acuitas
(Completi la seguente valutazione, solamente se ha risposto "Sì" alla domanda precedente 5.1 - Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
La formazione online multimediale è/era facilmente accessibile	◯	◯	◯	◯	◯
La formazione online multimediale è/era facile da capire	◯	◯	◯	◯	◯
La formazione online multimediale è/è stata utile per conoscere le funzionalità principali di Acuitas	◯	◯	◯	◯	◯

5.2 Ho ricevuto il training di persona il giorno dell'installazione di Acuitas

- ◯ Sì
- ◯ No

Valutazione della formazione su Acuitas ricevuta dall'utente il giorno dell'installazione
(Completi la seguente valutazione, solamente se ha risposto "Sì" alla domanda precedente 5.2 - Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
Il giorno dell'installazione di Acuitas, la persona addetta al training ha spiegato esaurientemente tutto ciò di cui avevo bisogno per lavorare in modo indipendente	◯	◯	◯	◯	◯
Nel complesso, ho ricevuto una buona formazione sull'utilizzo di Acuitas il giorno dell'installazione	◯	◯	◯	◯	◯

5.3 Nelle ultime quattro settimane ho contattato personalmente il supporto tecnico / helpdesk...

- ◯ 1-2 volte
- ◯ 3-4 volte
- ◯ 5-6 volte
- ◯ >6 volte
- ◯ Mai

Se desidera aggiungere un commento alla sezione 5, utilizzi lo spazio sottostante:

Sezione 6: Altre affermazioni

Altre affermazioni
(Indichi quanto e' d'accordo con ognuna delle seguenti affermazioni)

	Per niente d'accordo	Poco d'accordo	Né d'accordo, né in disaccordo	Abbastanza d'accordo	Molto d'accordo
Una specifica figura è disponibile per l'assistenza nelle difficoltà del sistema	○	○	○	○	○
Penso di essere in grado di completare i miei compiti usando Acuitas anche se non c'è nessuno vicino che mi possa aiutare	○	○	○	○	○
Penso di essere in grado di completare i miei compiti usando Acuitas a patto di avere molto tempo a disposizione	○	○	○	○	○
Sono esitante nell'uso di Acuitas per paura di fare errori che non posso più correggere	○	○	○	○	○
I miei superiori e l'organizzazione supportano e sono di aiuto nell'uso di Acuitas	○	○	○	○	○

Se desidera aggiungere un commento alla sezione 6, utilizzi lo spazio sottostante:

« Indietro | Invia