BEDRIJFSECONOMISCHE WETENSCHAPPEN

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master in de toegepaste economische wetenschappen: marketing

Masterproef

The acceptance of self-service technology by the customer: a meta-analysis

Promotor :
Prof. dr. Alexandra STREUKENS

Jelle Geerts

Masterproef voorgedragen tot het bekomen van de graad van master in de toegepaste economische wetenschappen , afstudeerrichting marketing

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WORD OF THANKS

By writing this thesis, I am writing the last piece of a chapter in my life. A chapter full of learning and challenges, fun and laughter. But also one of difficult moments. It was a chapter that gave me the foundations and the strength to base the following chapter of my book on: the rest of my life. Soon this new chapter will begin. Not knowing what will come, I look forward to it. With a backpack full of experiences, I know I am ready to face all of life's challenges.
I would like to thank Prof. dr. S. Streukens for the time and effort she made. With her help, I brought this research to a good end.
I would also thank my family and friends for the support they gave me.

ABSTRACT

A lot has been written about the factors influencing the acceptance of a Self-service Technology (SST). This research combines these studies and gives an answer on the question "Which are the most important factors leading to the acceptance of a SST?" by conducting a meta-analysis.

The meta-analysis showed that the factors perceived ease of use, subjective norm, self-efficacy and perceived usefulness are the most important factors influencing the intention to use a SST directly. The characteristics compatibility, perceived usefulness, perceived ease of use and 'fun' are the most important factors influencing the attitude towards use and indirectly influencing the intention to use a SST.

A moderator analysis was also conducted to see what the influence was from type of respondents (non-students vs. students), type of technology (on-site vs. Off-site options) and culture (non-western vs. western) on the relationships found in the meta-analysis. The relationships of perceived usefulness, perceived ease of use and self-efficacy with intention to use are stronger for students than for non-students compared to the relationships of perceived usefulness and perceived ease of use with attitude, which are stronger for non-students. The relationships between perceived usefulness and intention to use, perceived usefulness and attitude, perceived ease of use and attitude and attitude on intention to use are stronger in non-western cultures than in western cultures. The relationship for attitude on intention to use a SST is stronger for off-site options such as online banking and shopping on the internet than for on-site options such as the use of self-scans. This relation is also stronger for students. The thesis will end with a discussion of the limitations and implications.

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CHAPTER 1: INTRODUCTION

The offering of an added value for the customer is becoming essential in the dynamic and competitive company environment of today. The offering of a self-service technology (SST) can form such an added value. Just offering SSTs is not enough. Only if the customer accepts these technologies, companies derive substantial benefits. These are benefits like improved productivity and cost reduction, improved efficiencies and competitiveness, increases in market share, increases in customer reach, higher accessibility, time savings and control, increased customer satisfaction and loyalty, standardized service and differentiation through technological reputation (Shamdasani et al., 2008). More benefits are enhanced service quality and attraction of new customers over in-person services (Zhu et al., 2007). Not only companies but also customers derive benefits through the application of SSTs. According to Cunningham et al.(2008), they receive benefits in terms of convenience, ubiquitos availability, time savings, money savings and a reduction in the anxiety caused by judgmental service representatives.

SSTs are defined as interfaces on a technological basis by which customers produce services for themselves without direct service employee involvement (Meuter et al., 2000; Bitner et al., 2005; Shamdasani et al., 2008; Zhu et al., 2007). In other words, SSTs allow customers to interact directly with companies and fulfill a service delivery without involving service staff (Yang et al., 2010). There is a difference in customer SST (used by customers) and employee SST (used by employees in companies). In this research the focus will be on customer SST.

Many research has been done to the factors that will lead to the acceptance of a self-service technology. The problem is that existing research has never been summarized. The purpose of this thesis is to accomplish a meta-analysis to summarize the existing research and to get an objective summarized answer on the central research question: "**Which are the most important factors leading to the acceptance of a self-service technology by the customer?**" On the sub question **"What is the influence of moderators on the factors leading to the acceptance of a self-service technology by the customer?"** will also be given an answer.

First, this thesis will describe some models giving important information about possible factors leading to the acceptance of SST. To get a clear overview, these factors will be divided in some relevant groups. The empirical part consists of a meta-and a moderator analysis. Conclusions will be drawn and the limitations and implications will be described.

CHAPTER 2: LITERATURE REVIEW

There are four models giving important information concerning the influencing factors leading to the acceptance of a self-service technology by the customer. First, based on the article of Looney et al.(2008), the Social Cognitive Theory (SCT) is used as an overarching theoretical framework for this investigation. The elementary basis of the other 3 models and the thinking patterns behind the models are all based on this model. According to SCT, behavior depends on the interplay between contextual (environmental) and individual (personal) components which operate in a given situation. When interacting with the environment, individuals bring a set of abilities, expectations, traits and histories to bear. Environmental forces can inhibit or promote certain types of behavior. Self-efficacy is the concept central to the personal component of SCT. Environmental factors (including technological tools and resources at one's disposal) can have a profound influence on self-efficacy perceptions. Self-efficacy alone may be insufficient to get an individual in a specific behavior. The outcome expectations are also important. An individual may lack the necessary motivation, unless one expects the behavior to produce favorable outcomes. Figure 1 shows the SCT-model.

Looney et al.

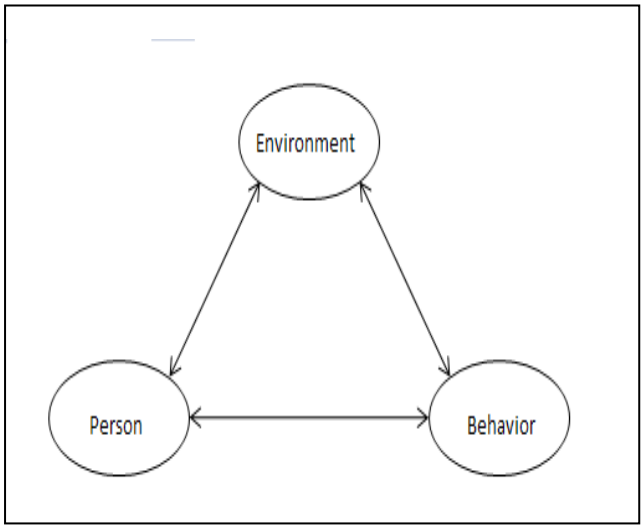

Figure 1: SCT-model

Second, the model of Meuter et al.(2005) describes that innovation characteristics and determinants of individual differences (individual characteristics) have a direct and mediated hypothetical relationship with customer trial of self-service technologies. Figure 2 shows this model.
The next important model is the TAM-model (figure 3, page 5) described by Schepers & Wetzels (2007). They describe that the TAM-model assumes that perceived usefulness (PU) and perceived ease of use (PEU) are two central technological factors influencing the attitude of a person and the behavioral intention towards using a technology. The factor subjective norm was not included in the original TAM. This factor will be discussed in the next section.

Meuter et al.

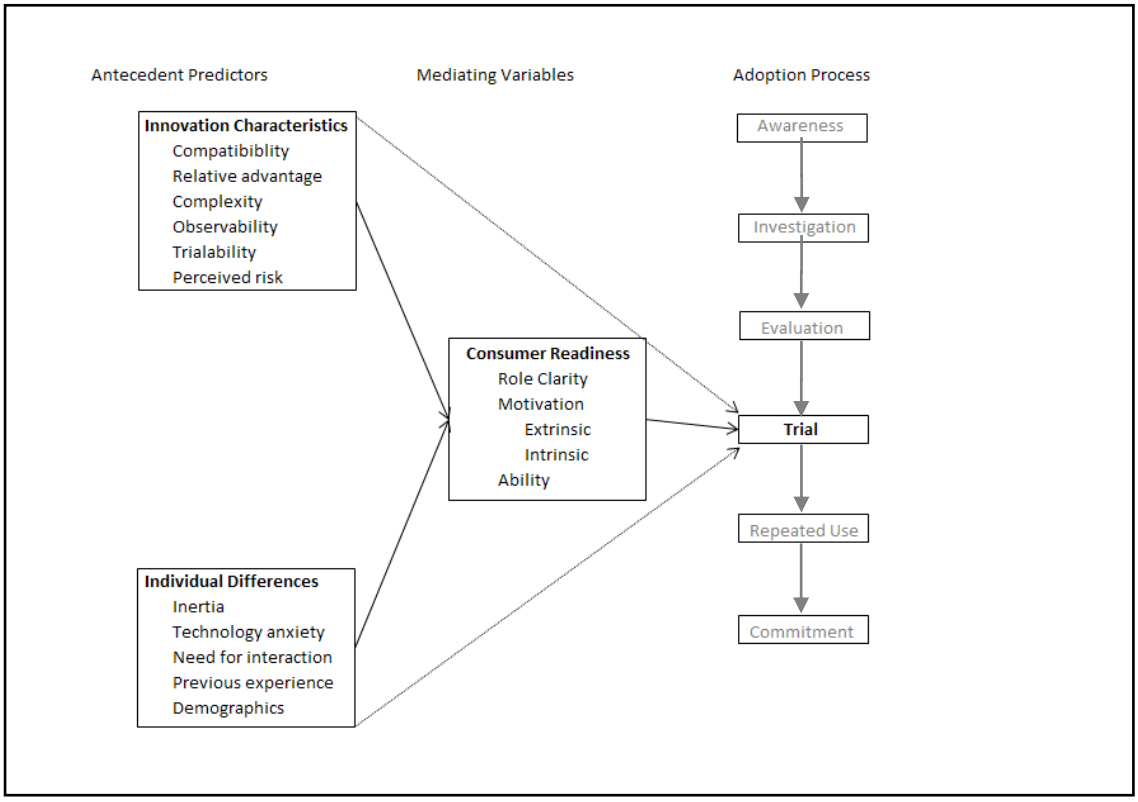

Figure 2: key predictors of consumer trial of self-service technologies

J.Schepers & M.Wetzels

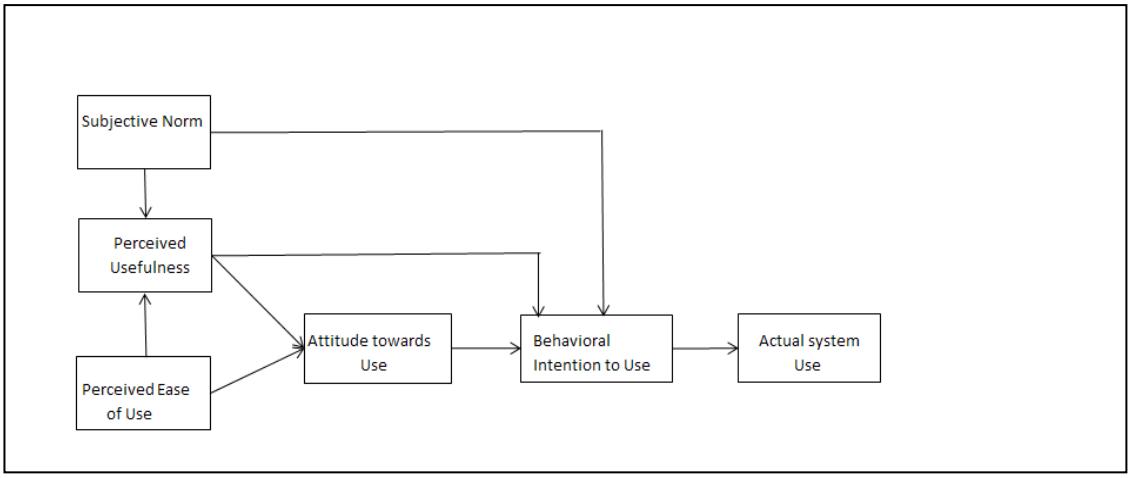

Figure 3 :TAM-model

At last, Dabholkar & Bagozzi (2002) also presented a TAM-model in their study, but they did not mention the factor subjective norm. Instead, they add the factor 'fun', because this determinant emerged as important in the use of technology by customers in a study accomplished by Webster (1989). They also replace perceived usefulness by performance. Figure 4 presents the adjusted TAM – model.

A.Dabholkar & P. Bagozzi

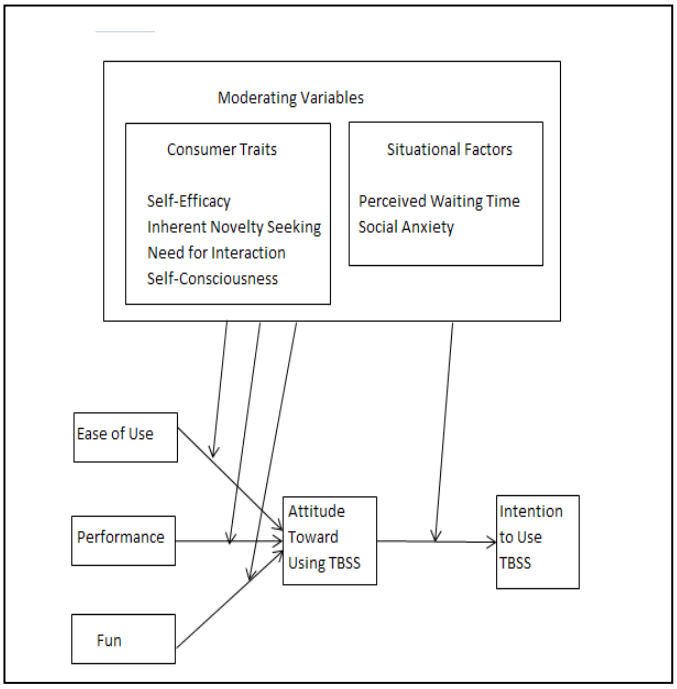

Figure 4: adjusted TAM-model

Based on the articles of Looney et al.(2008), Meuter et al.(2005), Schepers & Wetzels (2007) and Dabholkar & Bagozzi (2002), it can be concluded that the adoption attitude/ intention to use a SST is a function of

- Innovation characteristics
- Individual characteristics
- Technology characteristics
- Environmental characteristics

The next paragraphs give an overview of the specific variables for each of the four categories of characteristics. The two last paragraphs discusses the outcome variables and the possible moderators that will be used in this research.

Innovation characteristics

"An innovation is an idea, practice or object that is perceived to be new by an individual. It does not matter if the innovation is "objectively" new measured by a Lapse in time but, rather, it is the perceived newness to the potential adopter that counts" (Rogers, 2003). Based on previous definition, innovation characteristics are characteristics of self-service technologies perceived to be new by an individual.

Under the innovation characteristics will be found 6 determinants, described and explained by Meuter et al.(2005). These are compatibility (or conformity of the SST with consumer's lifestyle and values), relative advantage of the SST (the SST is perceived as better than an alternative), complexity (the SST is perceived as complicated or confusing), observability (the process of observing and communicating about the SST), trialability (the process of observing how the SST works) and perceived risk (the risk that the SST is too difficult to operate or will not work with the result that the likelihood of trial decreases).

Individual characteristics

Individual characteristics are characteristics that affect the individual competence of a person in using a technology (Cane & McCarthy, 2009).
Inertia (= resistance to the SST and inhibits changes in behavior), technology anxiety (= uncertainty or fear for using technology), need of personal interaction (with service employees), previous experience (with related technologies) and 'demographics' like age and education are the 5 determinants of individual characteristics described and explained by Meuter et al.(2005).
Looney et al.(2008) also described the factors self-efficacy and expected outcome as personal (individual) factors. Self-efficacy is "the perception of one's ability to organize and execute courses of actions to accomplish a particular task" (Bandura, 1986). Expected outcome is "the belief regarding the perceived likelihood that favorable consequences will occur after one has acted" (Bandura, 1986).

Technology characteristics

Technology characteristics are the features describing a particular technology (Cane & McCarthy, 2009).
The factors perceived usefulness, (perceived) ease of use, performance and 'fun' (or enjoyment) are technological characteristics influencing the intention to use a SST. Perceived usefulness and (perceived) ease of use are mentioned and described in the studies of Schepers & Wetzels (2007) and Dabholkar & Bagozzi (2002). Dabholkar & Bagozzi (2002) took the factors performance and 'fun' into account in their adjusted TAM-model.
PU is defined as "the subjectively perceived possibility that an information system can improve work performance for potential users" and PEU is "the perceived degree of effortlessness potential that users have when using an information system" (Davis et al., 1989). The factor performance is defined as "the reliability and accuracy of the technology-based self-service (TBSS) as perceived by the consumer" (Dabholkar & Bagozzi, 2002).

Environmental characteristics

Environmental characteristics are the totality of physical and social factors that are taken directly into consideration in the decision-making behavior of the individual (Duncan, 1972).

The factor subjective norm added in the TAM-model of Schepers & Wetzels (2006) is an environmental characteristic influencing the adoption attitude of a SST, because social psychologists know that an individual's social context can change his or her perception of physical objects which are unchangeable (Schepers & Wetzels, 2007).

Subjective norm is defined as "a person's perception that most people who are important to him think he should or should not perform the behavior in question" (Schepers & Wetzels, 2007).

Outcome variables

Attitudinal research (e.g., Bobbitt and Dabholkar (2001); Fishbein and Ajzen (1975)) suggests that attitudes will have a strong, direct, and positive effect on intentions (Dabholkar & Bagozzi, 2002). Attitude towards use and intention to use (a SST) are the outcome variables in this research. The direct and indirect (via attitude) relationship between the possible characteristics influencing the acceptance of a SST and intention to use will be investigated.

An attitude is defined as "the degree to which a person has a favorable or unfavourable evaluation or appraisal of the behavior" (Schepers & Wetzels, 2007). "Behavioral intentions are motivational factors that capture how hard people are willing to try to perform a behavior" (Pavlou & Fygenson, 2006).

Moderators

There are not only variables influencing the acceptance of a self-service technology, but there also exist variables that have an effect on these influencing relationships. Such variables are moderating variables or moderators. They can be derived from the processed studies.

The meta-analysis conducted by Schepers & Wetzels (2007) about the TAM - model took into account some moderating effects. These were among others the type of respondents, type of technology and the culture.

For the moderator 'type of respondents', Schepers & Wetzels (2007) distinguished between students and non-students and found that sample population seriously affected the relationships.
Possible causes could be the lack of variance in age, education and attitude toward using new technology in a student sample (Dabholkar, 1996). Therefore, a broader sample could be more useful. Schepers & Wetzels (2007) also argued that students are a more homogeneous group than non-students.
'Culture' was a significant moderating variable in about half of the cases and a split was made in western and non-western cultures (Schepers & Wetzels, 2007). The studies of Choi et al.(2004) and Lee et al.(1991) found a stronger influence of subjective norm on the intention to perform a local behaviour in non-western cultures. It also seemed that perceived usefulness was key in western cultures, while perceived ease of use was more important in non-western cultures (Schepers & Wetzels, 2007 and Mao et al., 2005). A possible explanation could be found in the description of the cultural dimensions from Hofstede. According to Hofstede's cultural dimensions, a collectivistic (non-western) culture is characterized with group conformity and face saving whereby others' opinions have more impact on the individual (Hofstede, 1991).
Technology under consideration (type of technology) has also a significant moderating effect (Schepers & Wetzels, 2007). I think it's because of the fact that different types of technologies have different characteristics and this could implicate that different factors are taken under consideration when forming an attitude about the SST leading to the intention to use the SST. In this thesis, technology under consideration is split in on-site technology options and off-site options. On-site options include touch screens in department stores, information kiosks at hotels, self-scanning in grocery stores, etc. Off-site options on the other hand includes telephone-and online-banking and shopping on the Internet (Dabholkar & Bagozzi, 2002).
Based on the articles of Schepers & Wetzels (2007), Dabholkar (1996), Hofstede (1991), Choi et al.(2004), Lee et al.(1991) and Mao et al.(2005), I think that the target group (students vs. non-students), the culture (western vs. non-western) and the type of SST (on-site options versus off-site options) are also possible moderators for this meta-analysis.

General model

The overall general model based on previous described models, characteristics and moderators that will be investigated is presented in the next figure.

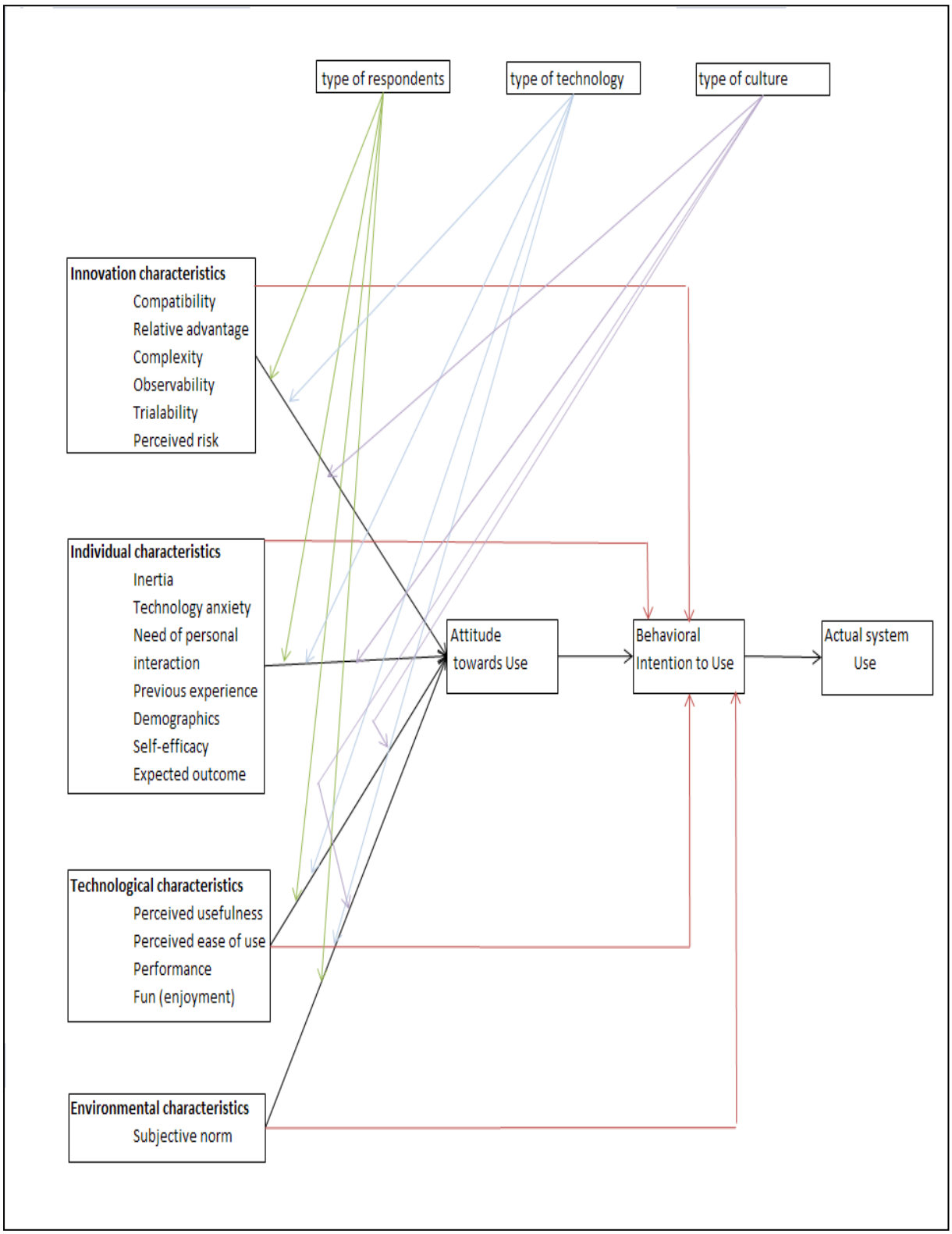

Figure 5: general model

CHAPTER 3: EMPIRICAL STUDY

The empirical study first describes the meta-analysis. The analysis will be explained, the search and inclusion criteria described and the results will be discussed. At last, the method and the results considering the moderator analysis will be made clear.

3.1. META-ANALYSIS

3.1.1. INTRODUCTION

The contribution of Hunter & Schmidt (1990) is used as a basis to conduct the analysis. According to them, the effect size is key to a meta-analysis. It encodes the selected research findings on a numerical scale. Any standardized index can be an affect size as long as it is comparable across studies, represents the magnitude and direction of the relationship of interest and is independent of the sample size. For this research, the correlation coefficient found in each study is chosen.

If the correlation coefficient was not calculated in the article and a regression analysis was conducted, the regression coefficient was reformed in a correlation coefficient according to the formula described in the article of Peterson & Brown (2005). According to them, the correlation coefficient is equal to the bètacoefficient (β) plus 0.05 Lambda (λ). λ is 0 when β is negative and 1 when β is non-negative.

The formula is the following:

$$r = \beta + .05\lambda$$

A weighted coefficient is calculated for each relationship in the analysis. It gives the importance of the influence that a characteristic has on the attitude or intention to use a SST. To calculate the weighted coefficient for a particular relationship, first a correction will be made for the correlation coefficient based on the Cronbach's alpha of the independent and dependent variables found in each study. This correction is made because measurement error could attenuate the correlation coefficient. The error of measurement systematically lowers the correlation between variables.

R_{corr} for each study will be calculated based on the following formula:

$$r_{corr(i)} = \frac{r_i}{\sqrt{\alpha_i(IV) * \sqrt{\alpha_i(DV)}}}$$

whereby r_i = correlation coefficient from study i, $\alpha_{(i)}(IV) =$ Cronbach's alpha of the independent variable from study i and $\alpha_i(IV) =$ Cronbach's alpha of the independent variable from study i

If the Cronbach's alpha was missing for a particular variable in a particular study for a particular relationship, the average of the other alpha's found in other studies for the same variable for the same relationship were used. If there was only one study with the Cronbach's alpha missing for a particular variable and relationship, the alpha got the value 1.
After this, each r_{corr} will be multiplied by the response rate of each study. Finally, all values of $n * r_{corr}$ will be summed and divided by the sum of the response rates.

$$r_{corr(w)} = \frac{\sum(n_i * r_{corr(i)})}{\sum n_i}$$

Whereby $r_{corr(w)} =$ weighted meta coefficient

Cohen suggests that r-values of 0.1, 0.3 and 0.5 represents respectively small, medium and large values. Every meta coefficient received a label small, medium or large (statmethods.net).
To test the significance of the founded meta coefficient, a confidence interval on the 5%-level is formulated and calculated. If the value 'o' does not occur in this interval, the meta coefficient is significant. The confidence interval on the 5%-level will be calculated based on the following formula:

$$r_{corr(w)} - 1.96(SD) < s < r_{corr(w)} + 1.96(SD)$$

SD is the standard deviation and is used to calculate the variability or diversity of the meta coefficient.

$$SD = \frac{\sum (r_{corr(i)} - r_{corr(w)})^2 * n_i}{\sum n_i}$$

Whereby $r_{corr(i)}$ = corrected correlation coefficient found in study i, $r_{corr(w)}$ =weighted meta coefficient found for a particular relationship and n_i = response rate from study i

3.1.2. SEARCH AND INCLUSION CRITERIA

The concept of self-service technologies is quite modern. Therefore, relevant literature is published ever since the middle of the 90's from the 20th century (1994). Scientific sources from all continents were taken into account.
EBSCOhost was used to conduct the search with the terms "Acceptance of Self-Service Technology", "SST usage", "usage of Self-Service Technology" and "Intention to use SST" in the databases Academic Search Elite, Business Source Premier, Regional Business News; Library, Information Science & Technology Abstracts and E-Journals. The list of references of the articles found was used to search further and further.
A lot of articles contained quantitative information about the factors influencing the intention to use a SST. Unfortunately, the quantitative data needed to perform a meta-and moderator analysis were missing in a lot of cases. Finally, a total of 14 articles were usable for this research.
Not all the characteristics that could possibly influence the intention to use a SST as described in the literature review were found during the literature search and processing.

3.1.3. RESULTS

Table 1 on page 15 gives a summary of the findings found in the meta-analysis. Several studies described the direct relationship of some factors on the intention to use (INT). These factors are the perceived usefulness (PU), the perceived ease of use (PEOU), the self-efficacy (SE), the subjective norm (SUB N) and the 'fun' (FUN). The founded $r_{corr(w)}$ is 0.17 for the relationship between FUN and INT, 0.49 for the relationship between PU and INT and 0.58, 0.54 and 0.50 for the relationships of respectively PEOU, SUB N and SE with INT. All the founded meta coefficients were significant on the 5%-level.

The meta coefficient is thus small for the relationship between FUN and INT, medium for the relationship between PU and INT and large for the relationships of the other three factors with INT.

The most factors found in the studies have an indirect relation on intention to use via attitude (ATT). The founded $r_{corr(w)}$ is 0.22 for the relation between gender (GEN) and ATT and 0.45, 0.37 for the relations between respectively SUB N, SE and ATT. A $r_{corr(w)}$ of 0.58, 0.57, 0.57 and 0.63 is found for the relations between respectively ATT and PU, PEOU, FUN and compatibility (COMP). The meta coefficient is smaller than 0.1 for the relationships of ATT between AGE, income (INC), education (EDU), occupation (OCCUP) and marital status (MAR). The $r_{corr(w)}$ of all the relationships were significant on the 5%-level. The $r_{corr(w)}$ is thus small for the relationship between AGE and ATT, medium for the relationships between SUBN, SE and ATT and large for the relationships between ATT and PU, PEOU, FUN and compatibility (COMP). Because the $r_{corr(w)}$ is smaller than 0.1 for the relationships of AGE, INC, EDU, OCCUP and MAR with ATT, there can be said that the meta coefficient not exist. Important to say is that the relationships and thus the results of ATT between AGE, INC, EDU, OCCUP, MAR, SUB N, SE, GEN and FUN were based on only 1 journal article.

The $r_{corr(w)}$ of the relationship between ATT and INT was significant on the 5%-level and large (0.60).

Table 1

pairwise relationship	number of studies	range of correlations		range of sample size		average alpha		rcorr		SD	Sign (5%)
		lower	upper	lower	upper	a(IV)	a(DV)				
PU→INT	7	0,05	0,71	123	845	0,89	0,91	0,49	M	0,07	S
PEOU→INT	4	0,12	0,67	123	312	0,88	0,83	0,58	L	0,08	S
SE→INT	3	0,28	0,68	271	312	0,84	0,88	0,50	L	0,04	S
SUB N→INT	2	0,38	0,64	281	312	1,00	0,88	0,54	L	0,02	S
FUN→INT	1	0,14	0,14	268	268	0,78	1,00	0,17	S	0,00	S
SUB N→ATT	1	0,45	0,45	312	312	1,00	1,00	0,45	M	0,00	S
SE→ATT	1	0,37	0,37	312	312	1,00	1,00	0,37	M	0,00	S
PU→ATT	8	0,25	0,70	167	845	0,85	0,87	0,58	L	0,02	S
PEOU→ATT	8	0,14	0,65	167	845	0,83	0,87	0,57	L	0,02	S
FUN→ATT	1	0,57	0,57	709	709	1,00	1,00	0,57	L	0,00	S
COMP→ATT	2	0,49	0,58	253	281	0,86	0,83	0,63	L	0,00	S
AGE→ATT	1	-0,05	-0,05	1167	1167	1,00	1,00	-0,05	NE	0,00	S
GEN→ATT	1	0,22	0,22	1167	1167	1,00	1,00	0,22	S	0,00	S
INC→ATT	1	0,07	0,07	1167	1167	1,00	1,00	0,07	NE	0,00	S
EDU→ATT	1	-0,02	-0,02	1167	1167	1,00	1,00	-0,02	NE	0,00	S
OCCUP→ATT	1	-0,03	-0,03	1167	1167	1,00	1,00	-0,03	NE	0,00	S
MAR→ATT	1	-0,08	-0,08	1167	1167	1,00	1,00	-0,08	NE	0,00	S
ATT→INT	6	0,26	0,82	253	845	0,92	0,93	0,60	L	0,04	S

3.2. MODERATOR ANALYSIS

3.2.1. INTRODUCTION

The work of Lipsey & Wilson (2001) is used as a basis to conduct the moderator analysis.

The comparison between the obtained effect sizes (ES) of the two variables of a particular moderator tell us if a moderator has a certain influence on a particular relationship between two variables. Only when the variance explained by the moderator is significant, the comparison is possible. In this analysis two effect sizes for each moderator will be calculated because the moderators are every time split in two groups. 'Type of respondents' is split in non-students and students, 'type of technology' is divided in on-site options vs. off-site options and 'culture' is split in non-western vs. western cultures.

The moderator analysis was only conducted if a particular relationship in the meta-analysis is explained by three or more articles and the moderator variable contains at least 1 difference across the studies.

The variance explained by a moderator is part of the total amount of variance in an effect size. The total amount of variance (Q_T) in meta-analytic effect sizes is equal to

$$Q_T = \sum \left[w_i (ES_i - ES)^2 \right]$$

whereby $w_i = n_i - 3$ is the weight associated with the i-th effect size, ES and $\overline{ES}$ is the average weighted effect size across groups.

$$\overline{ES} = \frac{\sum w_i ES_i}{\sum w_i}$$

Q_T is the sum of the variance that is be explained by the moderator (i.e. between-group variance Q_B and the variance that is not explained by the moderator (i.e. within-group variance Q_W).

$$Q_T = Q_B + Q_W$$

The within-group variance Q_W for group j($Q_{W(j)}$ can be calculated as follows:

$$Q_{W(j)} = \frac{\sum((w_i ES^2) - \sum w_i ES))}{\sum w_i}$$

To obtain the total amount of within group variance $Q_W = \sum_j Q_{W(j)}$

The amount of variance accounted for by the moderator (i.e. Q_B)can now be determined by taking the difference between Q_T and Q_w.

The component Q_B follows a chi-square distribution with j-1 degrees of freedom (j equals number of groups). To calculate the significance of the Q_B, the function CHIDIST in Excel was used.

3.2.2. RESULTS

If we look at table 3 on page 19, it is noticeable that for the relationships between intention to use and perceived usefulness, perceived ease of use and self-efficacy, the influences of type of respondents and culture were significant. The influences of type of respondents, culture and also type of technology were significant on the relationships between attitude and perceived usefulness, perceived ease of use and intention to use.
For all the investigated moderating influences, the p-value was always <0.05. This means that in all cases the meta coefficient significant differs between the two groups.

<u>type of respondents</u>

The relations between INT and PU, PEOU, SE en ATT are stronger for students than non-students because $ES_{students}$ is higher than $ES_{non-students}$. The highest difference between ES-values (0.38) can be found at the relationship between SE and INT.
The relationship on PU and PEOU on ATT is stronger for non-students than for students. The difference in ES-values is higher for the relationship between PU and ATT (0.25) than for the relationship between PEOU and ATT (0.14).

type of technology

The relation between PU and PEOU on ATT is lightly stronger for on-site options than for off-site options. The difference in ES-values is for PU on ATT 0.02 and for PEOU on ATT 0.06.

The relationship between ATT and INT is much stronger for off-site technology options than for on-site options with a difference in ES-values of 0.47.

culture

Only the relation between PEOU and INT is stronger in western than non-western cultures with a difference in ES-values of 0.09.

The relationships between PU and INT, PU and ATT, PEOU and ATT and ATT on INT are stronger in non-western cultures than in western cultures. The highest differences in ES-values are found for the relation between PU and INT(0.48) and for ATT on INT (0.40).

Table 2

	PU→INT	PEOU→INT	SE→INT	PU→ATT	PEOU→ATT	ATT→INT
number of studies	7	4	3	8	8	6
ES (non-students)	0,58	0,32	0,34	0,71	0,68	0,76
ES (students)	0,73	0,66	0,72	0,46	0,54	1,10
p(respondents)	0,00	0,00	0,00	0,00	0,00	0,00
ES (on-site)				0,70	0,70	0,47
ES (off-site)				0,68	0,64	0,94
p (type)				0,00	0,00	0,00
ES (non-western)	0,89	0,73		0,88	0,80	1,19
ES (western)	0,41	0,82		0,60	0,60	0,69
p (culture)	0,00	0,00		0,00	0,00	0,00

CHAPTER 4: CONCLUSIONS, LIMITATIONS AND IMPLICATIONS

4.1. CONCLUSIONS

Both meta- and moderator analyses give a clear answer on the two research questions central to this research. The central research question is: "**Which are the most important factors leading to the acceptance of self-service technology by the customer?** " Well, if we look at the results of the meta-analysis, it can be concluded that:

- the technology characteristic 'perceived ease of use', the environmental factor 'subjective norm', the individual characteristic 'self-efficacy' and the technology factor 'perceived usefulness' are the most important factors directly influencing the intention to use a SST. The $r_{corr(w)}$ are respectively 0.58, 0.54 ,0.50 and 0.49 and all these coefficients are statistical significant on the 5%-level.

- the most important factors influencing the attitude towards use of an SST are the innovation factor 'compatibility' and the technology characteristics 'perceived usefulness', 'perceived ease of use' and 'fun'. The $r_{corr(w)}$ are respectively 0.63,0.58, 0.57 and 0.57. All these coefficients are statistical significant on the 5%-level.

- The $r_{corr(w)}$ of the factors influencing attitude and the $r_{corr(w)}$ of the relationship between attitude and intention to use are both significant on the 5%-level. Because of that, the factors compatibility, perceived usefulness, perceived ease of use and 'fun' are also influencing the intention to use a SST on a 5% significance level.

Looking at the moderator analysis and the sub question "**What is the influence of moderators on the factors leading to the acceptance of self-service technology by the customer?**", it can be concluded that:

- the relationships of perceived usefulness, perceived ease of use and self-efficacy with intention to use are stronger for students compared to the relationships of perceived usefulness and perceived ease of use with attitude, which are stronger for non-students. A possible explanation can be that students make less considerations about usefulness and ease of use of an SST and take into account less other factors that can otherwise possibly influence their intention to use a SST. If a company wants that non-student customers, who are less curious and make more considerations than students, intend to try their SST, they must pay a lot of attention to a clear communication aimed at the positive benefits of it usefulness and the positive ease of use.

- The relationships between perceived usefulness and intention to use, perceived usefulness and attitude, perceived ease of use and attitude and attitude on intention to use are stronger in non-western cultures than in western cultures. Possibly the usefulness, ease of use and attitude in relation to the intention to use a SST is more liable to the opinion of others. A non-western culture is namely a collectivistic culture where the opinion of others in the group and 'face saving' are elementary characteristics (Hofstede, 1991). If a company wants that non-western customers intend to use its SST, it has to take into account the prevailed norms and values concerning usefulness and ease of use in that particular culture or within a particular target group. The company must try to positively promote and communicate the SST in line with these values and norms.

- The relationship for attitude on intention to use a SST is stronger for off-site options such as online banking and shopping on the internet than for on-site options such as self-scans. Its relation is also stronger for students.

A possible explanation can be that consumers are more reserved when the SST is explicitly and directly linked with financial affairs. The relationship can be stronger for students, possibly because students have less experience with financial matters than non-students. The attitude they will form to the use of the SST is because of that extra important.
If a company wants its customers to intend to try a certain off-site SST, it has to communicate its compatibility, usefulness, ease of use and fun positively and clearly. More attention must be given to students.

Overviewing figure

The next figure gives a clear overview of the obtained results.

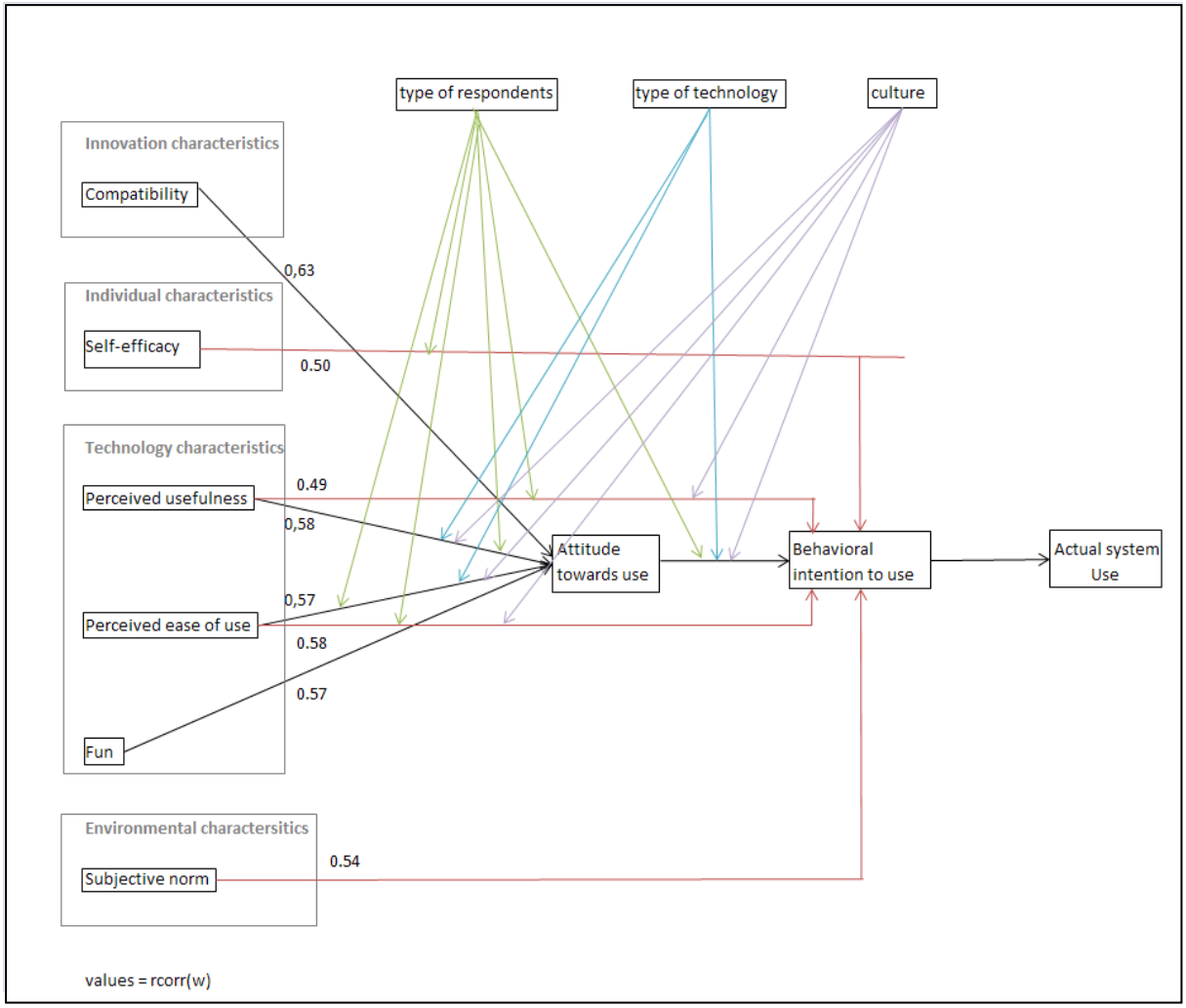

Figure 6: overview

4.2. LIMITATIONS

As previously said, a lot of articles contain only qualitative data about the intention to use a SST. The articles with also quantitative data not always mentioned the correlation matrix which was important to conduct both analyses for this research. Because of that, the correlation coefficient must sometimes be derived and estimated from the regression coefficient, which is not always exactly the same.

The characteristics from the TAM-model occurred mostly in both analyses because most of the founded articles were based on this model. Not one article gave some qualitative data of the characteristics relative advantage, complexity, observability, trialability, technology anxiety, need of personal interaction, previous experience and expected outcome.

Because of the lack of qualitative data, not every relationship investigated in the meta-analysis contained enough articles to conduct a moderator analysis. Only the relationships described by three or more articles were used in this analysis.

4.3. IMPLICATIONS

This study implicates that when a company would like to implement a new self-service technology, it would be likely that it describes the technology as useful, enjoyable, easy to use and compatible with the customers' lifestyle and values. The company must take into account that the subjective norm and self-efficacy of the customer are also two significant factors influencing the acceptance of the introduced SST. Management must be aware of the fact that different type of respondents (non-students or students), different type of technologies (on-site vs. Off-site options) and different type of cultures (non-western vs. western) require different types of communicating and promotion strategies.

Because of the fact that the results of this research are based on a limited number of articles, other non-investigated or non-described factors probably also influence the acceptation of a SST by the customer. If a manager must decide to implement a SST in their company, he or she must first focus on the 6 factors previous described, but also on the other ones, described, but not analysed.

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Articles with * are used in the meta-analysis.

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