

# Explaining social media acceptance by Business-to-Business SMEs in the South-East of England: a theory-enhanced qualitative comparative analysis

## Abstract

Drawing on a model of technology acceptance for microbusinesses, this paper deploys a set-theoretic approach to unravel the causal complexity associated with acceptance and non-acceptance of social media by Business-to-Business Small-and-Medium Enterprises (SMEs) based in the South East of England. Our findings show the causal asymmetry between acceptance and non-acceptance. While customer attraction, raising the company's profile and learning to use social media effortlessly lead to the acceptance of social media, non-acceptance requires finding social media not easy to use in combination with a lack of improvement of customer relations and work not becoming easier to do. Implications are discussed by highlighting the commonalities across positive and negative configurations of acceptance.

**Key words:** Social media; qualitative comparative analysis; multi-case design; triangulation; fuzzy sets; technology acceptance.

## **1. Introduction**

The acceptance of social media by British Small and Medium Enterprises (SMEs) is an underexplored area of research (Jussila et al., 2014; Michaelidou et al., 2011). Yet SMEs are the backbone of the British economy (Prowle, 2012) accounting for 99.9% of total private sector UK businesses, providing 59.1% of private sector employment and achieving 48.8% of turnover in the private sector (Federation of Small Businesses, 2012). In the modern business environment where organizations accumulate increasing volumes of data from a sprawling variety of sources and at fast speeds (Lycett, 2013), limited research is currently devoted to the enablers and barriers to the acceptance of social media, such as “the motivation to accept or intention to use the technology for particular purposes” (von Krogh, 2012: 160). Notwithstanding this paucity of studies, some important lines of enquiry have recently emerged in the information systems field (Aral et al., 2013; Günther et al, 2009; Järvinen et al., 2012; Jussila et al., 2014; Kallinikos et al., 2013; Kane et al., 2014; Kim et al., 2013; Koch et al., 2012; Leonardi et al., 2013; Mandal and McQueen, 2012; Michaelidou et al., 2011; Schoendienst et al., 2011).

Some scholars, for instance, have argued that social media promote exploratory learning (Schlagwein and Hu, 2016), that is, the acquisition of new knowledge in the form of customer expertise by helping businesses patrol user-generated content more efficiently (Larson and Watson, 2011), take up marketplace information more quickly (Jansen et al., 2009) and make Business-to-Business (B2B) communications more effective (Michaelidou et al., 2011). Similarly, other scholars have argued that engaging customers and improving traffic flow to the SMEs’ website are the primary routes towards realizing business value from the use of social media (Stockdale et al., 2012). Yet building enduring relationships and improving website traffic are time-consuming activities that require engagement with both existing and prospective customers (Ibid). Knowing why customers are online and managing the

interaction with them can put a strain on employees' attention as employees must attend to many information inputs which can translate into cognitive overload and, possibly, discontinued use of social media in the workplace (Bucher, et al., 2013; Borchardt, 2013; Järvinen et al., 2012; Leonardi et al., 2013). In addition, the embeddedness of social media within larger ecologies of search engines, recommendation engines, RSS feeds, web analytics tools and other web technologies (Hanna et al., 2011; Kallinikos et al., 2013; Kane et al., 2014) can create a further cognitive strain on SMEs because it entails constant adaptation to automatic updates in terms of new "features, policies, and applications" (Hogan and Quan-Haase, 2010: 309).

To grapple with the perverse dynamics that underpin the acceptance of social media by British SMEs, we set out to select a purposive sample of B2B SMEs based in the South East of England. The rationale for choosing B2B SMEs operating in the South East of England is threefold: first, B2B e-commerce is valued at three and half times more than Business-to-Consumer (B2C) e-commerce (Michaelidou et al., 2011). Yet the diffusion of social media among B2B organizations has been slow compared to their B2C counterparts (Ibid); second, being one of the most thriving areas in the United Kingdom (UK), the South East of England does not suffer from such infrastructural issues as low broadband speed, poor service reliability, high cost, etc., thus fostering facilitating conditions and social influence processes for ongoing use of social media; third, our purposive sample encompasses early adopter SMEs that used a wide range of social media tools (e.g., Twitter, LinkedIn, Blogs, Facebook, YouTube, Forum Discussion and other tools) and perceived such tools as being relevant for their particular business sectors. Accordingly, the SMEs under investigation are perfectly comparable because they are all early social media adopters whose thresholds in terms of number of employees and turnover fall within the EU guidelines (DG Enterprise and Industry, 2005).

In what follows, we explore the causal factors that are relevant for B2B SMEs' acceptance and adaptation to social media with a particular focus on the way they combine to produce the outcome of interest. To achieve this goal, we deploy a two-pronged approach. First, we capture the perverse dynamics of B2B SMEs' acceptance of social media by adopting a new methodology that is based on set-theoretic methods and configuration theories (Merali et al., 2012: 132). This methodology removes the homogenizing assumption that causal variables have the same effect on the outcome regardless of the values of other variables with which they combine (Ragin, 2008; Schneider and Wagemann, 2012). Second, we implement this methodology on the back of extant scholarship that has studied issues of technology acceptance for over two decades (Davis, 1989; Davis et al., 1989). More specifically, we deploy a set-theoretic lens of a revised version of the technology acceptance model (TAM) (Mandal and McQueen, 2012) to study the dynamic use of social media in the workplace. Though this model has been tested from a statistical perspective (e.g., Gefen et al., 2000), scholars are yet to couch this model in set-theoretic terms to scrutinize issues of dynamic use rather than initial adoption. Hence, we aim to apply the revised TAM in a novel way to shed a new light on hitherto underexplored issues.

The remainder of this paper unfolds as follows. In Section two, we review extant literature on technology acceptance in general and SMEs' acceptance of social media in particular. In Section three, we outline our set-theoretic approach, our data analysis technique, and the data collection methods. In Section four, we analyze our data and present our results. Finally, in Section five, we discuss our findings by comparing both positive, i.e. acceptance, and negative, i.e., non-acceptance, cases.

## **2. Theoretical background**

Social media may be regarded as Internet-based applications that employ mobile and web-based technologies to create highly-interactive platforms that allow the generation and

exchange of user-generated content (Kaplan and Haenlein, 2010). Compared with more traditional communication tools, social media enable organizations to bypass the trade-off between univocality and multivocality, reach and richness, and production and consumption (Huang et al., 2013). Furthermore, they allow organizations to engage in timely, open, and interactive conversations with end users at relatively-low costs (Kaplan and Haenlein, 2010). As such, they are particularly appealing to SMEs because SMEs are notoriously short of resources and funding (Järvinen et al., 2012). Web 2.0 tools and applications can enable SMEs to leverage their internal and external competences, reduce the need for costly IT infrastructure, and facilitate rapid internationalization (Bell and Loane, 2010). This, in turn, means that studying social media use by SMEs is a crucial step towards understanding how SMEs can cut costs, operate more efficiently, and be more competitive in a highly-dynamic business environment (Kim et al., 2013). Moreover, the use of social media is particularly challenging in the B2B SME context (Jussila et al., 2014). Despite the smaller number of customers, B2B SMEs are bound to engage with larger business partners than their B2C counterparts. Such larger business partners, in turn, can make more specialized demands, engage in more direct and more intense communications with B2B SMEs, and trigger competitive bidding situations, thus leading to increasing levels of complexity associated with the usage of social media platforms (Jussila et al., 2014; Michaelidou et al., 2011).

Given the challenges arising from the use of social media in the SME setting in general and the B2B SME context in particular, understanding the causes underpinning SMEs' acceptance of social media is imperative if one is to shed a new light on their competitiveness. Technology acceptance has long been the preserve of information systems scholars (Davis, 1989; Davis et al., 1989). TAM is probably one of the most cited reference frameworks in the field of information systems (Lee et al., 2003). Drawing on the theory of reasoned action (Ajzen and Fishbein, 2000), TAM simply and parsimoniously predicts that

technology usage is determined by behavioral intention which, in turn, is jointly and separately affected by the individual's attitude towards using the system and perceived usefulness (or performance expectancy) (Strader et al., 2007). Both perceived usefulness and attitude, in turn, are affected by perceived ease of use (or effort expectancy) and a host of external variables impinging upon perceived usefulness and perceived ease of use (Davis, 1989; Davis et al., 1989; Venkatesh and Davis, 2000).

Though adapting individual-level frameworks to studies of technology acceptance by SMEs is justifiable (Li et al., 2011) and though survey items can capture collective beliefs and intentions (Bagozzi, 2000), new technologies in general and social media in particular have been hypothesized to raise new challenges for TAM and its extensions (Günther et al., 2009; Schoendienst et al., 2011). For example, it has been argued that, compared with traditional objects of analysis in TAM research, social media imply social interaction, self-disclosure, and a higher degree of collaboration (Ibid). Hence, TAM has been aptly modified to account for the specific challenges raised by social media. In particular, communication benefits in terms of improved information flows have been theoretically and empirically identified to be the most important determinants of performance expectancy (Ibid). Furthermore, in the context of microbusinesses, owner characteristics and effort expectancy coupled with performance expectancy have been suggested to influence social media use in a two-way fashion (Mandal and McQueen, 2012). More specifically, it has been suggested that “during the initial adoption process, social influence and facilitating conditions have a moderating effect in the decision to adopt the tool. On adoption of the tool, owner characteristics, effort, and performance expectancy will iterate to play a dominant role in deciding the use of the tool” (Ibid: 8). Given that “there can be causal relationships between owner characteristics, performance and effort expectancy” (Ibid: 8) and given that our sample of purposively-selected, early-adopter B2B SMEs (Rogers, 2003) encompasses highly-innovative social

media organizations that used social media tools to participate in the study, we regard owners'/managers' personality traits as boundary conditions and explore within such boundaries the complex interaction effects between the dimensions of effort and performance expectancy.

Drawing on extant literature (Günther et al., 2009; Mandal and McQueen, 2012; Schoendienst et al. 2011), we expect that performance expectancy is positively associated with SMEs' acceptance of social media but effort expectancy is negatively associated because "the actual act of putting information into the system costs time as well" (Günther et al., 2009: 8). While social media potential to attract new customers, cultivate relationships, increase awareness, etc. (Kim et al., 2013; Michaelidou et al., 2011) raises the degree of performance expectancy and positively contributes to social media acceptance (Schoendienst et al., 2011), the effort required to be active on social media (Kaplan and Haenlein, 2010), contribute and follow content (Schoendienst et al., 2011) can undermine the advantages stemming from an enhanced performance expectancy. In other words, we expect that the dimensions of effort and performance expectancy work in opposite and at times unexpected directions, thus creating a causally-complex context where social media use occurs. Therefore, in this study we ask the following question: how do the dimensions of effort and performance expectancy combine to affect B2B SMEs' social media acceptance or the lack thereof?

Rather than investigating the initial adoption process, in this study we focus on the dynamic use of social media conceived of as a process of prompt adaptation and reinvention. Provided that facilitating conditions are satisfied and social influence processes are in motion in the industry where B2B SMEs operate (Michaelidou et al., 2011), the adoption decision is straightforward in the context of social media because there are virtually no costs involved

(Kaplan and Haenlein, 2010). Hence, we shift our focus from adoption to post adoption (i.e., adaptive use of social media. Cf. Barry and Fulmer, 2004: 276-279).

### **3. Methodology: the set-theoretic approach**

Given our interest in the way causes combine to determine B2B SMEs' acceptance and adaptation to social media, we deployed Qualitative Comparative Analysis techniques that articulate our causal expectations in set-theoretic terms (Ragin, 2008; Schneider and Wagemann, 2012). Set theory aims at separating a group (or set) of elements from everything else on the basis of a criterion of membership (Mingers, 2006). For example, based on whether (or not) the SME in question had accepted (and adapted to) social media quickly, we identified two separate types of cases, namely groups of positive and negative cases respectively.

We designed our study by using the indirect method of difference which consists of a double application of the method of agreement (George and Bennett, 2005). Essentially, we first searched for similarities across cases that might account for similar outcomes in terms of social media acceptance. We then searched for differences across cases that might account for differences across outcomes (i.e., acceptance vs. non-acceptance). Thus, we deemed cross-case commonalities to be irrelevant when moving from positive (i.e., acceptance) to negative cases (i.e., non-acceptance) because conditions present in both types of cases cannot account for differences in case outcomes. This approach mirrors the replication logic used for quasi-experimental designs (Yin, 2009). The search for similarities helps one predict similar results (i.e., literal replication). The search for differences helps one predict contrasting results in terms of acceptance vs. non-acceptance but for anticipatable reasons (i.e., theoretical replication). Hence, by using the replication logic one can develop causal inferences that provide fertile ground for theory development so as to corroborate one's theoretical explanation at the expense of a rival (or opposite) explanation (Yin, 2009).



Set-theoretic methods identify two types of causal relations, namely relations of causal necessity and sufficiency. Causal necessity implies a superset relation between causal conditions (or combinations of causal conditions) and outcomes because empirical instances of the outcome are outnumbered by the instances of the cause. For example, the group of SMEs that accept and adapt to social media quickly is a rough subset of the group of SMEs with a positive attitude towards social media in Figure 1. Hence, on the basis of TAM, one can argue that positive attitude towards technology is a necessary but not sufficient cause for technology acceptance because whenever we see instances of the outcome we almost always see instances of the cause but we might also see instances of the necessary cause without the outcome.

**[Insert Figure 1 here]**

Conversely, sufficiency entails a subset relation between causal conditions (or combinations of causal conditions) and the outcome because the empirical instances of the cause are fewer than the empirical instances of the outcome. For example, the group of SMEs that have a positive attitude towards technology and simultaneously perceive it as useful is a rough subset of the group of technology-accepting SMEs in Figure 2. Hence, on the basis of TAM, one can argue that whenever we see SMEs with positive attitudes towards a technological tool that also happen to perceive it as useful we almost always see SMEs accepting the technology in question even though instances of technology acceptance may occur for other reasons such as competitor pressure or social influence (Ajzen and Fishbein, 2000).

**[Insert Figure 2 here]**

QCA is simultaneously a context-oriented research approach and a set of techniques aimed at unravelling causal complexity. As a context-oriented approach, QCA interweaves the context-sensitive logic of process theories with the variance-oriented logic of quantitative

research seeking explanations in terms of independent (or causal) variables causing changes in the dependent (or outcome) variable (Romme, 1995). QCA's context-sensitive logic is discovery-oriented because the sample under investigation is not viewed as a homogeneous representation of a wider population but as a heterogeneous collection of different types, subtypes and mixed types of configurations (or patterns). Hence, this context-sensitive approach entails the discovery of several, mutually non-exclusive pathways leading to the outcome of interest with each pathway corresponding to a particular configuration or combination of causal conditions resembling an overall type of case (Fiss, 2011).

Given the discovery-oriented and exploratory hallmark of QCA and considering the growing body of research on social media (Aral et al., 2013; Günther et al., 2009; Järvinen et al., 2012; Jussila et al., 2014; Kallinikos et al., 2013; Kane et al., 2014; Kim et al., 2013; Koch et al., 2012; Leonardi et al., 2013; Mandal and McQueen, 2012; Michaelidou et al., 2011; Schoendienst et al., 2011), we undertook a theory-enhanced qualitative comparative analysis (QCA) that was informed by our theoretical expectations about the linkages between causal (or independent) and outcome (or dependent) variables (Schneider and Wagemann, 2012). Hence, we tried to uncover multiple and partially-overlapping combinations of causal conditions in our sample which were subsequently simplified with the inclusion of counterfactuals (or "thought experiments") that met our theoretical expectations about necessary and sufficient conditions (Ibid).

### *3.1 The analytical technique*

Set-theoretic approaches are based on a specific template to undertake data analysis. This template requires three steps (Fiss, 2011; Schneider and Wagemann, 2012).

### *Step 1: Calibration*

First, causal conditions and outcome variables must be calibrated through the assignment of appropriate set-membership scores based on anchor points informed by theoretical and substantive knowledge (Ragin, 2008). Subsequently, these set measures are used to construct a truth table with  $2^k$  rows, where K is the number of causal conditions used in the analysis. The truth table is an analytic device that lists all logically-possible combinations of causal conditions both present and absent with their associated outcomes (Rihoux and Ragin, 2009). The empirical cases can then be assigned to these rows on the basis of their values for the causal conditions, with some rows containing many cases, some rows just a few, and some rows containing no cases at all.

One of the main problems with truth-table analysis is that the number of logical combinations increases exponentially with the number of causal conditions (K). For instance, with K=2 there are 4 logically-possible combinations ( $2^2=4$ ). With K=3, there are 8 logically-possible combinations ( $2^3= 8$ ), with K=4, there are 16 logically-possible combinations ( $2^4= 16$ ), and so on. As the number of logically-possible combinations increases, so does the number of remainders, thus creating a potentially-large number of empty rows. Researchers, therefore, are advised to keep the number of causal conditions to a reasonable minimum. Following Ragin's (2008: 142) advice, we used only eight causal conditions, namely: 1) enhancing business performance; 2) improving customer relations; 3) attracting new customers; 4) raising the company's profile; 5) ease of working with social media; 6) ease of learning to use social media; 7) skillfulness at using social media; 8) ease of interaction with social media. Our outcome variable instead was measured in terms of the degree to which the SME in question accepts and adapts to social media quickly.

**[Insert Table 1 here]**

Drawing on our knowledge of the social media field (Aral et al., 2013; Günther et al, 2009; Järvinen et al., 2012; Jussila et al., 2014; Kallinikos et al., 2013; Kane et al., 2014; Kim et al., 2013; Koch et al., 2012; Leonardi et al., 2013; Mandal and McQueen, 2012; Michaelidou et al., 2011; Schoendienst et al., 2011) and prior interviews held with the Managing Director of the company that administered the survey (i.e., Alpha, a pseudonym), we conceived of (perceived) usefulness (or performance expectancy) and (perceived) ease of use (or effort expectancy) as a combination of conditions that are individually necessary and jointly sufficient for conceptual membership (Goertz and Mahoney, 2012; Mahoney and Goertz, 2006). Each condition was measured on a five-point scale ranging from “strongly disagree” to “strongly agree”. These conditions were subsequently coded from 1 to 5 with 1= “strongly disagree”; 3= “neither agree nor disagree”; 5= “strongly agree” as the three anchor points. Such single-item scales were then calibrated using Ragin’s (2008) direct method of calibration as this method is available in the fuzzy-set Qualitative Comparative Analysis (fsQCA) 2.5 software and can be applied whenever rating-scale variables are at hand (Ragin, 2008; Schneider and Wagemann, 2012). Items coded 5 were calibrated as being full members of the target set (i.e., 0.951), items coded 3 were calibrated as being neither in nor out of the target set (i.e., 0.501) and items coded 1 were calibrated as being full non-members of the target set (i.e., 0.051). By virtue of the calibration process, we stipulated the degree to which each case has membership in the set of cases having a certain property (Ibid). For example, when calibrated, ease of working with social media represents the degree to which each SME belongs to the set of SMEs whose staffs find it easier to do their work using social media.

*Step 2: Determining the outcome value for each truth-table row*

In the second step, the outcome value for each truth-table row was determined based on the minimum number of cases required for a solution, that is, a statement about one or multiple combinations of conditions joined by logical AND (\*). When the total number of cases

included in the analysis is medium (e.g., between 10 and 100 cases), researchers can opt for just one case as their minimum threshold (Cf. Goertz and Mahoney, 2012: 228; Schneider and Wagemann, 2012: 153). That is, just one case with a certain combination of variables and a given outcome is sufficient to establish the existence (or not) of a causal mechanism that links a causal configuration to the outcome of interest. Of course, with larger numbers of cases this limit can be set higher. Therefore, in this paper we set a frequency threshold of 1 to discriminate between remainders and non-remainders, the former being empty rows, the latter being rows populated with empirically-strong cases. However, we also ran several robustness tests with higher frequency thresholds (e.g., 3 or 5 cases) to ascertain the veracity of our results.

We then considered the consistency (sufficiency) level for each row populated with cases. Consistency (sufficiency) is a measure that gauges the degree to which a causal condition or combination of conditions is a subset of the outcome. Since researchers must set consistency thresholds for sufficiency not below 0.75 (Ragin, 2008: 136/144), we set our consistency sufficiency threshold for acceptance at 0.79 to avoid untenable assumptions. Conversely, we set the sufficiency threshold for non-acceptance at 0.89. Accordingly, truth-table rows with consistency above 0.79 (or 0.89 for negative cases) were given a score of 1 since the configuration was roughly a consistent subset of the outcome, or 0 if not. The empty rows in the truth table were labelled “remainders” (or potential counterfactuals) because they did not meet our minimum number-of-cases threshold.

### *Step 3: Minimizing the truth table*

In the final step, we used the fsQCA program to minimize the truth table and derive more parsimonious (i.e., shorter or less complex) solutions in a theoretically-guided manner. Based on “what if” claims about the remainders (Durand and Vaara, 2009), we formulated directional expectations about the universe of empty rows in the following fashion. First, we

set a consistency necessity threshold of 0.90 or above (Schneider and Wagemann, 2012: 278) to identify conditions that were roughly-consistent supersets of the outcome of interest. Next, we barred from the minimization process those remainders that contradicted at least one necessary condition because a “(logical) conjunction of two or more conditions can only be necessary for the outcome of interest if all single conditions involved in the conjunction are necessary on their own” (Ibid: 92). Thus, we postulated that the absence of just one necessary condition must warrant the absence of the outcome of interest (e.g., non-acceptance). We then set consistency thresholds for necessity of 0.96 (positive cases) and 0.90 (negative cases) and subsequently coupled the ensuing necessary conditions with their complements for negative cases and positive cases respectively to formulate directional expectations on sufficient conjunctions of conditions (Schneider and Wagemann, 2012).

### *3.2 The data collection methods*

Data were collected using both quantitative (i.e., a survey) and qualitative (i.e., interviews) methods. We used a short web-based exploratory survey (Sue and Ritter, 2012) to gather information from SMEs which were geographically-dispersed in the South East of England because it fit our discovery-oriented approach. Since the focus of our study was SMEs undertaking B2B activities, we used an online questionnaire to contact 102 SMEs based on Alpha’s customer database. These 102 SMEs were contacted using several social media tools (e.g., LinkedIn, Twitter, etc.) to ensure that they were *real* social media adopters/users *regardless of respondents’ age*. Out of the 102 SMEs that participated in the survey, a further 20 companies were removed either because of conflicting data or because they were primarily engaged in B2C activities.

Exploratory research is conducted during the early stages of research when the core objective is to gain preliminary insights on a topic (Forza, 2002). Being exploratory, the survey was kept relatively short (Åhlström and Westbrook, 1999). Most items asked respondents to rate

issues surrounding the use of social media. Such issues included the usefulness and ease of use social media in general and the usefulness of specific social media platforms in particular (e.g., Twitter, LinkedIn, Facebook, etc.), as well as the methods used to measure the effectiveness of social media (e.g., Widgets, Google Analytics, Radian6, etc.). The survey also included a section on sector of operation, annual turnover, number of employees and number of years the SME in question was in business. All survey items were informed by validated instruments (e.g., Gefen et al., 2000; Michaelidou et al., 2011) and preliminary meetings with Alpha's Managing Director. The choice of rating scales was justified by the exploratory character of our research. Rating scales are easy to understand and, therefore, suitable for online surveys (Sue and Ritter, 2012).

The survey instrument was administered by Alpha and was trialed for a week in January 2012 to gather feedback and reduce potential biases, as well as ensure the wording was fully understandable. Survey items were aptly randomized to reduce the impact of common methods bias on the true scores (Straub et al., 2004: 402) and some items were negatively worded to minimize the respondents' tendency to mechanically circle the points towards one end of the scale. Data were collected on Survey Monkey during the last two weeks of February 2012. Given the strategic nature of technology acceptance, the small size of the companies in question, current data collection methods in the context of SMEs (Li et al., 2011: 11), and considering that group membership is more ingrained in SMEs' owners than their employees (Haugh and McKee, 2004), we chose a single respondent per SME, usually the Founder and Managing Director. All respondents were promised a summary of results to be emailed back to them upon request, as well as participation in a prize draw.

Qualitative data instead were gathered using unstructured and semi-structured interviews with Alpha's Managing Director. We held a total of three interviews with Alpha's Managing Director. Two interviews took place before the administration of the survey instrument in a

very unstructured and exploratory fashion. The third interview occurred afterwards to discuss our findings and their practical implications. Multiple interviewers participated in each round of interviews to probe several lines of inquiry at first and then cross-check our findings. All interviews were digitally recorded and analyzed by searching for broad themes (Braun and Clarke, 2006).

#### **4. Results**

Once converted into fuzzy sets, data were captured in the appropriate data matrix whose rows correspond to actual SMEs.

**[Insert Table 2 here]**

Data were subsequently analyzed with the truth-table approach using the fsQCA 2.5 program (Ragin, 2009). Though the truth table is the predominant mode of sufficiency analysis in QCA, we first performed an analysis of necessity with the “necessary conditions” procedure by setting a consistency threshold of 0.96 for positive cases. This produced the following necessary conditions (see conditions highlighted in bold in Table 3).

**[Insert Table 3 here]**

Subsequently, we created a dichotomous truth table from our original data matrix. Thus, we obtained a truth table with  $2^8$  rows (i.e., 256 rows) where each row denotes logically-possible configurations of conditions.

**[Insert Table 4 here]**

Each row of Table 4 represents a configuration of 8 causal conditions where 1s and 0s stand for full membership and full non-membership in each condition respectively. For example, the first row of the truth table represents a configuration of 8 causal conditions that are all present. The fifth row, instead, indicates a configuration of 8 causal conditions where only enhancing business performance, attracting new customers, and raising the company’s profile



are present, thus pointing to a straightforward pattern or commonality across the top five rows. For each row, the number of cases that uniquely travel along that causal configuration is indicated (see the column “Number”) with each case having a membership greater than 0.5 for that particular configuration. The truth table also indicates the raw consistency of each row (i.e., the consistency of each truth-table row with the statement of sufficiency, namely that the row in question is a subset of the outcome). The Proportional Reduction in Inconsistency (PRI) score, instead, “is a more refined and conservative measure of consistency” that helps moving from not knowing if the causal condition is a subset of the outcome or the absence of the outcome to asserting that it is a subset of the presence of the outcome (Mendel and Ragin, 2011: 38). Lastly, the Product is simply the product between the raw consistency score and the PRI score. “Conjunctions with a high Product value are those for which there is a clear non-simultaneous subset relation, and there is no problem in interpreting them as sufficient conditions for the outcome of interest” (Schneider and Wagemann, 2012: 243).

Given our frequency threshold of 1 case (see Step 2 above), we declared as remainders those rows containing no cases at all. Subsequently, we deployed the Theory-Enhanced Standard Analysis (TESA) as follows (Schneider and Wagemann, 2012). We first barred from the minimization process those remainders that contradicted the statement of necessity (i.e., those configurations where at least one necessary condition was absent). This was done by coding such remainders with an outcome value set at 0. We then conjectured that the simultaneous presence of the two necessary conditions for social media acceptance (i.e., customer attraction and company profile) coupled with the complement of at least one necessary condition for non-social media acceptance (i.e., improved relations, ease of working, ease of learning, skillfulness, ease of interaction) should lead to the acceptance of social media. We further conjectured that the simultaneous presence of the two necessary conditions for

acceptance coupled with the presence of an enhanced business performance should too lead to social media acceptance because this conjecture makes theoretical sense (Michaelidou et al., 2011). All non-remainders were subsequently coded 1 in the outcome variable “fsSocialMedia\_Acceptance” if they met our consistency thresholds for sufficiency (i.e., 0.79) or 0 otherwise. Our solution terms are reported below.

**[Insert Table 5 here]**

Next, we identified the necessary conditions for the negative cases by setting a consistency threshold for necessity of 0.90. This produced the following conditions (see conditions highlighted in bold in Table 6).

**[Insert Table 6 here]**

Subsequently, we dissected the configurations being causally linked with the absence of the outcome of interest. The analysis of the negative cases produced a new truth table.

**[Insert Table 7 here]**

We then set a frequency threshold of 1 (see step 2 above) and barred from the minimization process those remainders that contradicted one or more necessary conditions (i.e., non-improved relations, non-ease of working, non-ease of learning, non-skillfulness and non-ease of interaction). Subsequently, we conjectured that the combination of the causal conditions necessary for non-social media acceptance coupled with the complement of at least one necessary condition for social media acceptance (i.e., non-customer attraction or non-company’s profile) and/or the absence of an enhanced business performance should lead to the absence of the outcome of interest (i.e., non-social media acceptance). By deploying these conjunctural directional expectations and by setting a consistency threshold for sufficiency of 0.89, we obtained the following solution terms.

**[Insert Table 8 here]**

## 5. Discussion & Conclusion

Traditionally, informational and relational benefits have been regarded as the most important determinants of perceived usefulness and, indirectly, social media acceptance by B2B SMEs (Jussila et al., 2014; Michaelidou et al., 2011). Our informants do corroborate this finding:

Most B2B SMEs see social media as an indirect way [to do business]. They use them as a public relation tool to build up relations, raise their profile, and supplement the ways they use to do business. Increasingly B2B SMEs realize that it is a two-way communication [tool]. B2B SMEs are having chats and discussions with existing and prospective staffs, existing and prospective customers, and partners. In that sense it is about a real engagement over a platform which is free and two-way (Alpha Managing Director).

However, under deeper scrutiny, our findings reveal that informational and relational benefits are just one among many pathways to B2B SMEs' acceptance and adaptation to social media (see Table 5). Within these multiple, partially-overlapping pathways, two main causal recipes stand out which instantiate two overall types of configurations, namely pure configurations of usefulness (i.e., causal recipes using only "usefulness" ingredients) and hybrid configurations (i.e., causal recipes mixing both "usefulness" and "ease-of-use" ingredients). Though all pathways feature high consistency scores, it is worth stressing that consistency is a gauge of theoretical importance (Rivard and Lapointe, 2012). To identify the most empirically-important pathway one instead needs to look at the coverage scores (Ragin, 2008). Coverage (sufficiency), in particular, refers to how much of the membership of the outcome is covered by the path either singularly (i.e., unique coverage) or in combination with other paths (i.e., raw coverage). Since the ease of learning path has the highest scores in terms of raw and unique coverage (0.95 and 0.009 respectively), it follows that this pathway is the most theoretically and empirically-important route to the outcome of interest. Furthermore, this

pathway is replicated across 64 SMEs (see rows 1 & 2 in Table 4) and provides the best description of four configurations (see ID 19, 20, 21, 22 in Table 2). The partitioning of the pathways to the outcome of interest may be depicted with a Venn diagram displaying, for reasons of simplicity, only empirically non-redundant pathways with a non-zero unique coverage (i.e., the “ease of learning” and “enhancing business performance” pathways).

**[Insert Figure 3 here]**

Therefore, in the relatively-small sample of B2B SMEs at our disposal, the most important pathway is the one entailing a conjunction among three factors, namely attracting new customers, raising the company's profile, and finding social media easy to learn (i.e., the complement of non-ease of learning). Why is this pathway the most theoretically and empirically-relevant route to B2B SMEs' acceptance and adaptation to social media?

Social media are dynamic technologies which are in a constant state of flux (Hogan and Quan-Haase, 2010). Not only are new social media tools developed at a rapid pace but existing platforms and technologies are constantly being updated with new “features, policies, and applications” (Ibid: 309). The easier SMEs find learning to use social media, the more quickly they will accept and adapt to social media because they can easily bypass cognitive traps in terms of routinized procedures stemming from encroaching habits. While an easy to learn interface arguably plays a pivotal role in the early stages of social media adoption (Gefen and Straub, 2000; Venkatesh et al., 2003), the extent to which learning to use social media is easy for B2B SMEs and staffs alike is causally associated with the acceptance and prompt adaptation to new features, applications, and tools. Contrary to Venkatesh's et al. (2003) argument that effort-related constructs are salient only in the early stages of technology adoption, learning to use social media effortlessly leads to quick adaptation and reinvention processes provided that social media enable B2B SMEs to attract new customers and raise their profile.

Our findings also reveal that the conditions leading to the acceptance of social media are different from those leading to non-acceptance. A perfectly symmetric and short-hand recipe for the absence of the outcome of interest would reveal the absence of three causal ingredients, namely, 1) the lack of attraction of new customers, 2) the absence of an enhanced company's profile, 3) the presence of one of the necessary conditions for non-acceptance of technology (i.e., non-improved relations, non-ease of working, non-ease of learning, non-skillfulness or non-ease of interaction) or, alternatively, the lack of an enhanced business performance. Yet, as Table 8 shows, the combination of the necessary conditions for non-acceptance of social media can work in conjunction with either the absence of an enhanced business performance, or the lack of an improved company's profile, or the lack of attraction of new customers to determine non-acceptance of social media. Though all pathways lead to non-social media acceptance, the lack of attraction of new business customers is the only empirically non-redundant route to the outcome of interest thanks to its positive unique coverage (i.e., 0.04). The Venn diagram below illustrates these findings.

**[Insert Figure 4 here]**

Therefore, the analysis of the negative cases reveals that: a) non-ease of use is a relevant pre-requisite for non-social media acceptance; b) the lack of attraction of new customers plays a key empirical role in determining non-social media acceptance (see Table 8). How do these findings compare with extant research?

Several scholars have called for a clear definition of acceptance (Benbasat and Barki, 2007; Schwarz and Chin, 2007; Straub and Burton-Jones, 2007). For example, in their commentary, Straub and Burton-Jones (2007: 224) have questioned whether TAM researchers really wish to explain system usage because "the acceptance construct itself has never been clearly delineated". Similarly, Schwarz and Chin (2007) have demurred at the use of metrics based on amount, extent, or frequency of use and encouraged a broader conceptualization of usage

beyond initial adoption and throughout the entire lifecycle “where other forms of acceptance may predominate or other usage goals such as learning, adaptation, and optimization of IT become the central thrust” (Ibid: 233). Likewise, Benbasat and Barki (2007: 215) have suggested that researchers should “broaden their perspective of system use from one that exclusively focuses on a “narrow” amount view of users’ direct interaction with systems to one that also includes users’ adaptation, learning, and reinvention behaviors around a system”. Echoing earlier calls to include the notions of adaptation, reinvention, and learning (Agarwal, 2000), our findings show that acceptance conceived of as a process of dynamic use is closely influenced by the ease of learning to use social media. Indeed, the analysis of the negative cases corroborates this finding as it shows that non-ease of use in general and non-ease of learning in particular are relevant pre-requisites for non-acceptance. But in which context can a technology which is intrinsically easy to use turn out to be non-easy to use?

Social media are dynamic technologies which are endowed with an ambivalent ontology (Kallinikos et al., 2013). As stated by our informants:

If someone perceives that social media are not easy to learn and not easy to interact with, that’s because they have not been trained or supported with appropriate tools to cope with the growing number of leads and the swirling changes. When users are skillful they realize that social media are very easy to use. If you can send an email and an attachment, you can send a tweet and re-tweet and update a Facebook post, unless, of course, you are of a very certain age. Social media are very easy and intuitive tools (Alpha Managing Director).

Social media are embedded within larger ecosystems (Hanna et al., 2011; Kallinikos et al., 2013; Kane et al., 2014), undergo constant change (Schlagwein and Hu, 2016; Wisniewski et al., 2014) and call for fluid managerial practices (Huang et al., 2013). As the underlying technical and social features change, it is likely that the cognitive effort associated with social

media usage is bound to increase because of relentless updates in terms of new features, policies, and applications. Automatic and habitual behaviors are constantly being disrupted as the mandatory transition to the new Facebook interface reminds us only too well (Wisniewski et al., 2014). Furthermore, attracting new customers and raising the company's profile can put an additional strain on SMEs' attention because they are bound to produce a growing number of leads (Jussila et al., 2014). Given these perverse dynamics, if B2B SMEs' staffs are not trained or supported with appropriate tools, they will perceive social media as less easy to use. As social media become less easy to use, they simultaneously lead to impoverished relations with customers while making work more difficult to do. Given this cognitively-taxing context, if social media do not attract new customers, B2B SMEs will discontinue using them. This vicious cycle implies that social media may not be easy to use even though their intrinsic features are such that they objectively have a clear, simple, intuitive, and easy to navigate interface. In the words of Ives' et al. (1983: 786): "a good information system perceived by its users as a poor system is still a poor system".

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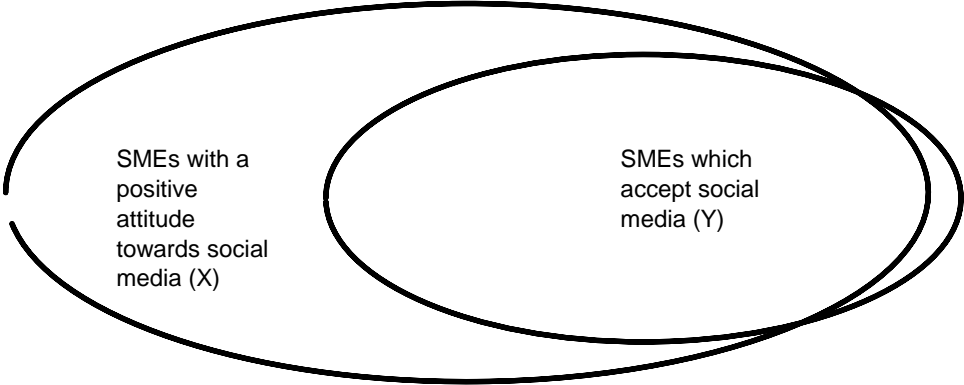
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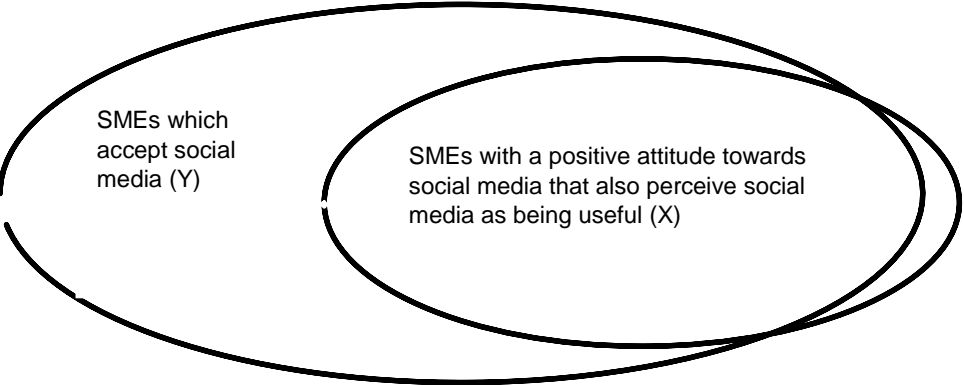
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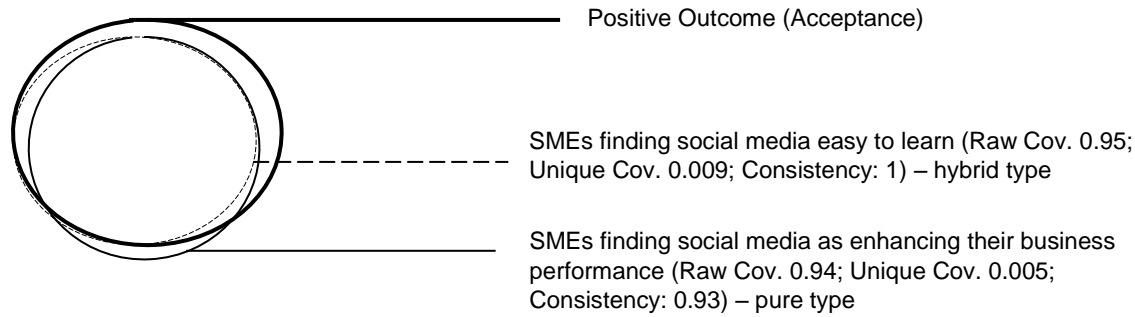


**Figure 1:** Venn diagram illustration of causal necessity

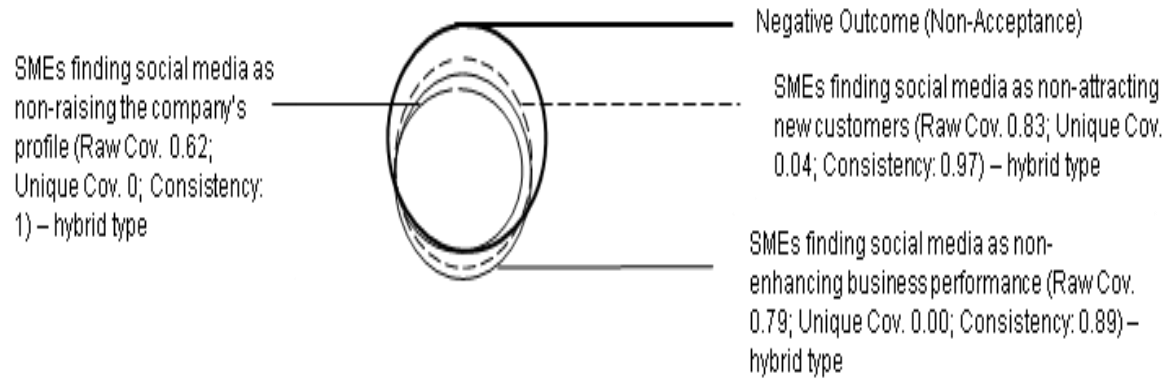


**Figure 2:** Venn diagram illustration of causal sufficiency





**Figure 3:** Venn diagram partitioning of empirically non-redundant pathways to social media acceptance (most important path represented by a dash circle)



**Figure 4:** Venn diagram partitioning of pathways to non-social media acceptance (most important path represented by a dash circle)

**List of tables**

**Table 1**

**Survey items used for the theory-enhanced QCA with sources**

<b>Concept</b>	<b>List of conditions individually necessary and jointly sufficient for conceptual membership (Scale from 1= strongly disagree to 5= strongly agree)*</b>
(Perceived) Usefulness (Performance expectancy)	<p>We (i.e., the SME) find social media useful in enhancing our business performance (Adapted from Gefen et al., 2000 &amp; Paluch et al., 2015)</p> <p>Social media attracts new customers to the company (Adapted from Michaelidou et al., 2011)</p> <p>Our relations with customers have improved since we started using social media (Adapted from Michaelidou et al., 2011)</p> <p>Social media has helped the company raise its profile (Adapted from Michaelidou et al., 2011)</p> <p>Social media makes it easier for staffs to do their work (Adapted from Gefen et al., 2000 &amp; Paluch et al., 2000)</p>
(Perceived) Ease of Use (Effort expectancy)	<p>Learning to use social media is easy for us (Adapted from Gefen et al., 2000 &amp; Paluch et al., 2015)</p> <p>Staffs have become skillful at using social media (Adapted from Gefen et al., 2000 &amp; Paluch et al., 2015)</p> <p>Staffs find social media easy to interact with (Adapted from Gefen et al., 2000 &amp; Paluch et al., 2015)</p>
<p>*Acceptance was measured in terms of prompt acceptance and adaptation to social media (i.e., "My company accepts and adapts to social media quickly"). Only one single item was used for the outcome variable because we measured perceptions of behavioral change (Cook and Perri, 2004; Williams et al., 2007) and because of our focus on the causes of effects rather than the effects of causes (Cf. Mahoney and Goertz, 2006: 230-232)</p>	

**Table 2**  
**Fuzzy-set calibrated data matrix**

Case ID	fsPerfor	fsRelations	fsCust_Attr	fsComp_Profile	fsEase_Work	fsEase_Learn	fsSkillful	fsEase_Intera	fsSocialMedia_Accept
ID 1	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 2	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 3	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 4	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 5	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 6	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 7	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 8	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 9	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 10	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 11	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
ID 12	0.951	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 13	0.951	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 14	0.951	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 15	0.951	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 16	0.821	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 17	0.821	0.951	0.951	0.951	0.821	0.951	0.951	0.951	0.951
ID 18	0.821	0.821	0.951	0.951	0.821	0.951	0.951	0.821	0.951
ID 19	0.821	0.821	0.951	0.951	0.821	0.951	0.821	0.821	0.951
ID 20	0.821	0.821	0.951	0.951	0.821	0.951	0.821	0.821	0.951
ID 21	0.821	0.821	0.951	0.951	0.821	0.951	0.821	0.821	0.951
ID 22	0.821	0.821	0.951	0.951	0.821	0.951	0.821	0.821	0.951
ID 23	0.821	0.821	0.821	0.951	0.821	0.821	0.821	0.821	0.951
ID 24	0.821	0.821	0.821	0.951	0.821	0.821	0.821	0.821	0.951
ID 25	0.821	0.821	0.821	0.951	0.821	0.821	0.821	0.821	0.951
ID 26	0.821	0.821	0.821	0.951	0.821	0.821	0.821	0.821	0.951
ID 27	0.821	0.821	0.821	0.951	0.501	0.821	0.821	0.821	0.821
ID 28	0.821	0.821	0.821	0.821	0.501	0.821	0.821	0.821	0.821
ID 29	0.821	0.821	0.821	0.821	0.501	0.821	0.821	0.821	0.821



ID 60	0.501	0.501	0.501	0.821	0.181	0.501	0.501	0.501	0.501
ID 61	0.501	0.501	0.501	0.821	0.181	0.501	0.501	0.501	0.501
ID 62	0.501	0.501	0.501	0.821	0.181	0.501	0.501	0.501	0.501
ID 63	0.501	0.501	0.501	0.821	0.181	0.501	0.501	0.501	0.501
ID 64	0.501	0.501	0.501	0.821	0.181	0.501	0.501	0.501	0.501
ID 65	0.501	0.501	0.501	0.821	0.181	0.181	0.501	0.501	0.181
ID 66	0.501	0.501	0.501	0.821	0.181	0.181	0.501	0.501	0.181
ID 67	0.501	0.501	0.501	0.821	0.181	0.181	0.501	0.501	0.181
ID 68	0.501	0.501	0.501	0.821	0.181	0.181	0.501	0.501	0.181
ID 69	0.501	0.501	0.501	0.821	0.181	0.181	0.181	0.181	0.181
ID 70	0.501	0.501	0.501	0.821	0.181	0.181	0.181	0.181	0.181
ID 71	0.501	0.501	0.501	0.821	0.181	0.181	0.181	0.181	0.181
ID 72	0.501	0.181	0.501	0.501	0.181	0.181	0.181	0.181	0.181
ID 73	0.501	0.181	0.501	0.501	0.181	0.181	0.181	0.181	0.181
ID 74	0.501	0.181	0.501	0.501	0.181	0.181	0.181	0.181	0.181
ID 75	0.501	0.181	0.501	0.501	0.181	0.181	0.181	0.181	0.181
ID 76	0.501	0.181	0.501	0.501	0.181	0.181	0.181	0.181	0.181
ID 77	0.501	0.181	0.181	0.501	0.181	0.181	0.181	0.181	0.181
ID 78	0.501	0.181	0.181	0.501	0.051	0.181	0.051	0.181	0.181
ID 79	0.501	0.181	0.181	0.501	0.051	0.181	0.051	0.181	0.181
ID 80	0.181	0.051	0.181	0.501	0.051	0.181	0.051	0.181	0.181
ID 81	0.181	0.051	0.181	0.181	0.051	0.051	0.051	0.051	0.051
ID 82	0.181	0.051	0.181	0.181	0.051	0.051	0.051	0.051	0.051

**Table 3**

**Analysis of necessary conditions (~ = indicates absence of the condition in question. Consistency necessity set at 0.96. Necessary conditions in bold; Outcome variable: fsSocialMedia\_Acceptance)**

Conditions tested	Consistency	Coverage
fsPerformance	0.94	0.91
~fsPerformance	0.28	0.70
fsRelations	0.91	0.96
~fsRelations	0.31	0.64
<b>fsCustomer_Attr</b>	<b>0.99</b>	0.93
~fsCustomer_Attr	0.23	0.62
<b>fsCompany_Profile</b>	<b>1.00</b>	0.86
~fsCompany_Profile	0.19	0.71
fsEase_Working	0.73	1
~fsEase_Working	0.46	0.65
fsEase_Learning	0.95	1
~fsEase_Learning	0.27	0.56
fsSkillfulness	0.90	0.97
~fsSkillfulness	0.32	0.62
fsEase_Interact	0.93	0.97
~fsEase_Interact	0.29	0.61

**Table 4****Truth table for positive cases (with no set membership in the outcome and no remainders or empty rows)**

fsPerform	fsRelations	fsCust_Attr	fsComp_Profile	fsEase_Work	fsEase_Learn	fsSkillfulness	fsEase_Interact	Number	fsSocialMedia_Accept	Raw Cons <sup>a</sup>	PRI Cons <sup>b</sup>	Product <sup>c</sup>
1	1	1	1	1	1	1	1	56 (68%)		1.00	1.00	1.00
1	1	1	1	0	1	1	1	8 (78%)		1.00	1.00	1.00
1	1	1	1	0	0	1	1	4 (83%)		0.92	0.68	0.63
1	1	1	1	0	0	0	0	3 (86%)		0.87	0.55	0.48
1	0	1	1	0	0	0	0	5 (93%)		0.79	0.40	0.32
1	0	0	1	0	0	0	0	3 (96%)		0.72	0.09	0.07
0	0	0	1	0	0	0	0	1 (97%)		0.71	0.09	0.06
0	0	0	0	0	0	0	0	2 (100%)		0.71	0.00	0.00

<sup>a</sup>= Consistency of a single truth-table row with the statement of sufficiency

<sup>b</sup>= Proportional Reduction in Inconsistency

<sup>c</sup>= Multiplication between Raw Consistency and PRI score

Please note that, due to limitations of space, only 8 of the 256 possible configurations are described because they have empirical instances.

**Table 5**

**TESA solution for positive cases (\* = Indicates logical AND, that is the conjunction or intersection of sets. Consistency necessity= 0.96; consistency sufficiency: 0.79; necessary conditions in bold)**

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	<b>Raw Coverage</b>	<b>Unique Coverage</b>	<b>Consistency</b>
<b>fscustomer_attr*fscustomer_profile*fsperformance</b>	0.94	0.005	0.93
<b>fscustomer_attr*fscustomer_profile*fsrelations</b>	0.90	0.000	0.96
<b>fscustomer_attr*fscustomer_profile*fssease_working</b>	0.73	0.000	1.00
<b>fscustomer_attr*fscustomer_profile*fssease_learning</b>	0.95	0.009	1.00
<b>fscustomer_attr*fscustomer_profile*fskillfulness</b>	0.90	0.000	0.98
<b>fscustomer_attr*fscustomer_profile*fssease_interact</b>	0.93	0.000	0.98

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Solution coverage: 0.96

Solution consistency: 0.93

Similar solutions in terms of necessary and sufficient conditions and parameters of fit could be arrived at when setting a consistency threshold for sufficiency of 0.85 or 0.90. By similar we mean solutions that are in a clear subset/superset relation and parameters of fit that do not warrant different substantive interpretations (Cf. Schneider and Wagemann 2012: 285-286). However, only the 0.79 consistency sufficiency threshold warrants no untenable assumptions (i.e., assumptions that contradict our theoretical expectations about necessity and sufficiency).



**Table 6**

**Analysis of necessary conditions (~ = indicates absence of the condition in question. Consistency necessity set at 0.90. Necessary conditions in bold; Outcome variable: ~fsSocialMedia\_Acceptance)**

<b>Conditions tested</b>	<b>Consistency</b>	<b>Coverage</b>
fsPerformance	0.72	0.30
~fsPerformance	0.79	0.85
fsRelations	0.60	0.27
<b>~fsRelations</b>	<b>0.91</b>	0.80
fsCustomer_Attr	0.68	0.27
~fsCustomer_Attr	0.83	0.97
fsCompany_Profile	0.82	0.30
~fsCompany_Profile	0.62	1.00
fsEase_Working	0.43	0.25
<b>~fsEase_Working</b>	<b>1.00</b>	0.61
fsEase_Learning	0.51	0.23
<b>~fsEase_Learning</b>	<b>1.00</b>	0.90
fsskillfulnesss	0.55	0.26
<b>~fsSkillfulness</b>	<b>0.95</b>	0.80
fsEase_Interact	0.56	0.25
<b>~fsEase_Interact</b>	<b>0.95</b>	0.85

**Table 7****Truth table for negative cases (with no set membership in the outcome and no remainders or empty rows)**

fsPerform	fsRelations	fsCust_Attr	fsComp_Profile	fsEase_Work	fsEase_Learn	fsSkillfulness	fsEase_Interact	Number	~fsSocialMedia_Accept	Raw Cons <sup>a</sup>	PRI Cons <sup>b</sup>	Product <sup>c</sup>
0	0	0	0	0	0	0	0	2 (2%)		1.00	1.00	1.00
0	0	0	1	0	0	0	0	1 (4%)		0.97	0.91	0.88
1	0	0	1	0	0	0	0	3 (7%)		0.97	0.91	0.88
1	0	1	1	0	0	0	0	5 (13%)		0.86	0.60	0.51
1	1	1	1	0	0	0	0	3 (17%)		0.84	0.45	0.38
1	1	1	1	0	0	1	1	4 (22%)		0.83	0.32	0.26
1	1	1	1	0	1	1	1	8 (32%)		0.49	0.00	0.00
1	1	1	1	1	1	1	1	56 (100%)		0.25	0.00	0.00

<sup>a</sup>= Consistency of a single truth-table row with the statement of sufficiency

<sup>b</sup>= Proportional Reduction in Inconsistency

<sup>c</sup>= Multiplication between Raw Consistency and PRI score

Please note that, due to limitations of space, only 8 of the 256 possible configurations are described because they have empirical instances.

**Table 8**

**TESA solution for negative cases (~ = indicates absence of the condition in question; \* = Indicates logical AND, that is the conjunction or intersection of sets. Consistency necessity: 0.90; consistency sufficiency: 0.89; necessary conditions in bold)**

	Raw Coverage	Unique Coverage	Consistency
<b>~fsrelations*~fsease_working*~fsease_learning*~fsskillfulness*~fsease_interact*~fsperformance</b>	0.79	0.00	0.89
<b>~fsrelations*~fsease_working*~fsease_learning*~fsskillfulness*~fsease_interact*~fscompany_profile</b>	0.62	0.00	1.00
<b>~fsrelations*~fsease_working*~fsease_learning*~fsskillfulness*~fsease_interact *~fscustomer_attr</b>	0.83	0.04	0.97

Solution coverage: 0.83

Solution consistency: 0.89

Similar solutions in terms of necessary and sufficient conditions and parameters of fit could be arrived at when setting a consistency threshold for sufficiency of 0.85. By similar we mean solutions that are in a clear subset/superset relation and parameters of fit that do not warrant different substantive interpretations (Cf. Schneider and Wagemann 2012: 285-286). However, only the 0.89 consistency sufficiency threshold warrants no untenable assumptions (i.e., assumptions that contradict our theoretical expectations about necessity and sufficiency).