

# Personality dimensions and service failure severity: A cross-sectional study in the cellular industry

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## ABSTRACT

Service providers base service recovery efforts to retain consumers on service failure severity. A good understanding of possible effects on service failure severity is therefore necessary, and so this study examined the effects of personality dimensions on service failure severity. A hierarchical regression analysis was performed on data collected from 564 respondents through convenience sampling. The results indicated significant effects of Extraversion and Agreeableness on perceived service failure severity. In terms of theory, this study extends the influence of the trait theory of personality to service failure research. Furthermore, practical recommendations for cell phone network providers' service recovery strategies include combining restorative and apologetic strategies.

**Key words:** service failure severity, personality dimensions, age, service failure, service recovery strategies, cell phone network provider

Consumers expect a mutually beneficial exchange with their service providers, as predicted by social exchange theory. However, there is a high likelihood that service failures will occur at some point during the interaction between consumers and service providers due to the nature of services (Lacey 2012: 137). Although two consumers may seem alike when addressing their specific needs in using a service, their reactions to service provision and service failures could differ extensively. Consumers may therefore experience a loss based on the inequity in the exchange as a result of service failure. The intensity of the loss that consumers experience is referred to as service failure severity (McQuilken & Robertson 2011: 955; Weun, Beatty & Jones 2004: 135).

Service failure severity is considered by service providers so as to decide on appropriate service recovery strategies (Soares & Proença, 2015: 8). Conversely, service

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failure severity significantly influences consumers' repurchase behaviour (Soares & Proença 2015: 4) and other behavioural intentions (Sengupta, Balaji & Krishnan 2015: 671), such as consumers' complaint behaviour (Chelminski & Coulter 2011: 361, 366), by encouraging negative word of mouth (Barakat, Ramsey, Lorenz & Gosling 2015: 115; Chang, Tsai, Wong, Wang & Cho 2015: 58), exit intentions, switching to competitors, and voicing (McQuilken & Robertson 2011: 960). Furthermore, service failure severity is positively correlated to consumers' expectations of service recovery (Hess, Ganesan & Klein 2003: 141; Yi & Lee 2005: 6), and influences consumers' role in the service recovery process and their chosen coping with service failure behaviour (Tsarenko & Tojib 2012: 1220), as well as their evaluations of the effectiveness of service recovery strategies (Chuang, Cheng, Chang & Yang 2012: 262; Kim & Ulgado 2012: 162). Severe service failures negatively impact consumers' loyalty (Wang, Wu, Lin & Wang 2011: 355), trust, commitment (Weun et al. 2004: 139) and satisfaction with service recovery (Barakat et al. 2015: 115; Sengupta et al. 2015: 671). To date, most research has thus focused on investigating the consequences of service failure severity rather than possible individual consumer effects on service failure severity.

The significant role of service failure severity necessitates a better understanding of what affects it and how (Weun et al. 2004: 141). Differences in consumers' personalities may cause apparently similar consumers to react differently to the same loss experienced from a service failure and the service recovery provided (De Oliveira, Cherubini & Oliver 2013: 2; Kim & Jang 2014: 118). This study focused on the effects of personality dimensions (trait theory of personality) on service failure severity. In addition, based on a call for considering consumers' characteristics in identifying how service failure severity varies across individuals (Soares & Proença 2015: 9), demographic variables relevant to the evaluation of services, namely, age (Palmer, Beggs & Keown-McMullan 2000: 521) and gender (Lee, Kim, Ko & Sagas 2011: 61), were also considered. Quantitative research was used to examine the influence of personality dimensions on consumers' perceived service failure severity. The results indicate that two dimensions of personality have significant effects on consumers' perceived service failure severity.

This study makes two contributions. The theoretical contribution lies in examining the influence of trait theory of personality in a service failure research context. Practically, the findings empower service providers to take personality dimensions into consideration when deciding on appropriate service recovery strategies. This practical implication may result in consumer retention even when service failures are perceived as severe. The remainder of this paper is organised as follows: service failure and the severity thereof based on prospect theory are discussed, followed by an exploration of personality in terms of the Big Five personality domains as

theoretical foundation of the study. The research question is then examined by means of a hierarchical regression, which is used to draw conclusions on the effects of personality dimensions on service failure severity. Recommendations for cell phone network providers are provided, and the paper closes by discussing the limitations of the study.

## Theoretical overview

This section will examine service failure, service failure severity, personality and demographic variables considered in this study.

### Service failure

Based on social exchange theory, consumers and service providers engage in exchanges that are mutually beneficial and rewarding (Emerson 1976: 336). Exchange relationships between consumers and service providers should be balanced if they are based on social exchange theory (Smith, Bolton & Wagner 1999: 360). During exchanges, consumers receive the benefits of the service provided, while service providers receive monetary compensation for the services rendered. While service providers determine the cost of the service and decide on a mark-up percentage for the service to make a reasonable profit, consumers determine their satisfaction with the exchange through their expectations. Consumers' expectations reflect anticipated service delivery performance (Churchill & Surprenant 1982: 492). The expectancy disconfirmation paradigm is thus at play when consumers evaluate whether their exchange with a service provider is considered 'mutually beneficial and rewarding' or not.

According to Churchill and Surprenant (1982: 491–492), the expectancy disconfirmation paradigm entails that consumers' expectations of service delivery are used to determine the size and direction of the disconfirmation experienced. Service failures occur whenever consumers' expectations of service delivery are not met. When service failures occur, there is an imbalance in the relationship, because consumers did not receive what they expected (Betts, Wood & Tadisina 2011: 2).

Consumers will experience a loss from a service failure even if efficient service recovery was implemented (Weun et al. 2004: 135). The cost of a loss directly impacts the severity of the loss consumers perceive (Thørgensen, Juhl & Poulsen 2009: 767). Outcome service failures typically involve utilitarian exchange losses (economic resources, such as money, goods or time), while process service failures typically involve symbolic exchange losses (involving psychological or social resources, such

as status, esteem or empathy) (Chang, Tsai & Hsu 2013: 374; Smith et al. 1999: 357). The attribution theory holds that consumers are more forgiving if they view the service failure not to be foreseeable by the service providers (Magnini, Ford, Markowski & Honeycutt 2007: 221). However, prospect theory posits that even though service providers use service recovery strategies in an effort to retain their existing consumers when service failures occur, the loss consumers perceive from a service failure might not be shifted to a gain, despite considerable efforts by service providers to do so (Chuang et al. 2012: 261; McQuilken, McDonald & Vocino 2013: 43; Smith et al. 1999: 359). According to prospect theory (Kahneman & Tversky 1979: 279), as the intensity of the loss consumers perceive from a service failure increases, so does the perceived severity thereof (Weun et al. 2004: 135). Service failure severity is considered to be one of the most significant indicators of a consumer's behavioural actions following service failures. Service failure severity also guides service providers' service recovery strategies (Smith et al. 1999: 360), which can include unresponsive, restorative, apologetic or reimbursement strategies, or a combination of these (Bateson & Hoffman 2011: 368–369).

### Service failure severity

Consumers perceive some service failures as more serious than others (Kelley & Davis 1994: 53), ranging from minor annoyances to major aggravations as the perceived severity increases (McQuilken & Robertson 2011: 955). Therefore, consumers not only experience a service failure, but do so with different levels of intensity, referred to as service failure severity (Weun et al. 2004: 135). Severe service failures amplify consumers' perceived loss (Weun et al. 2004: 135); severe service failures will have more enduring consequences for consumers (Kim & Jang 2014: 118). Based on the prospect theory, consumers' perceived losses as a result of a severe service failure are more difficult to address with either a tangible (restorative or reimbursement service recovery strategies) or psychological (apologetic service recovery strategies) service recovery approach (Chuang et al. 2012: 267). In considering service failure severity, the results indicated that a combination of service recovery strategies should yield higher levels of satisfaction (Fu, Wu, Huang, Song & Gong 2015: 63). However, overcompensation is ineffective (Gelbrich, Gäthke & Grégoire 2015: 118). Apologies can mitigate consumer anger by addressing the psychological loss experienced through a service failure (Fu et al. 2015: 62), while consumers' co-participation in service recovery strategies may result in a successful recovery experience (Sengupta et al. 2015: 672).

Consumers' perceptions are, however, subjective evaluations of service delivery and can differ from one consumer to the next (Thørgensen et al. 2009: 764), as consumers will have their own reference points for service delivery (Kahneman & Tversky 1979: 277) based on their expectations thereof (Churchill & Surprenant 1982: 491). For this reason, consumers' perceived service failure severity can differ from one consumer to the next even though they could have experienced exactly the same service failure (Thørgensen et al. 2009: 764).

Service failure severity is considered to vary depending on individual and situational variables (Soares & Proença 2015: 9). Some consumers are easily irritated and annoyed by things that go wrong in everyday life, which makes them naturally more susceptible to the inclination to become dissatisfied (Thørgensen et al. 2009: 765). Therefore, certain consumers may be predisposed to perceive service failures as severe. The contention of this research is that consumers' personality dimensions affect perceived service failure severity.

## Personality

Personality relates to emotion and cognition (Jani & Han 2015: 50) and therefore impacts on consumers' behaviour towards and interaction with service providers (De Oliveira et al. 2013: 4) as well as their shopping behaviour (Guido, Peluso, Capestro & Miglietta 2015: 139). Derived from trait theory, the Big Five dimensions are useful for characterising individual differences between consumers (Digman 1990: 436), as personality can be adequately described by 'five superordinate constructs' (Costa & McCrae 1995: 46; Digman 1990: 420). The Big Five dimensions provide an all-inclusive framework for the main individual differences in personality (Soto & John 2009: 84; Vecchione & Caprara 2009: 487). The semantic theme shared by the traits contributing to the five broad dimensions were used to label the Big Five dimensions (Donahue 1994: 46) as Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness (Digman 1990: 424; Goldberg 1992: 26; Goldberg 1990: 1217, 1228; Jani & Han 2015: 50). These dimensions have been found using descriptive adjectives of personality in various languages and cultures (Mendiburo-Seguel, Páez & Martínez-Sánchez 2015: 336).

The semantic themes allow for more cross-situational replication (Barrick & Mount 2005: 367). Global traits, such as the Big Five, are appropriate for explaining and developing theory (as attempted in this study). The Big Five dimensions are dimensional rather than categorical (Goldberg 1990: 1223). For this reason, each dimension tends to be described in two directions. In the next few paragraphs, each dimension is briefly discussed.

### *Extraversion*

Consumers who rate themselves highly on Extraversion are likely to associate themselves with traits such as being talkative, active, self-assured, full of life, optimistic (Goetzmann, Moser, Vetsch, Grieder, Klaghoffer, Naef, Russi, Boehler & Buddeberg 2007: 400), assertive, self-confident (Tonetti, Fabbri & Natale 2009: 186), sociable (Mendiburo-Seguel et al. 2015: 339; Yoo & Gretzel 2011: 619), fun-loving and affectionate (Pineles, Vogt & Orr 2009: 48). Furthermore, the propensity to express dissatisfaction is related to Extraversion (Thørgensen et al. 2009: 764), resulting in the anticipation of a positive relationship with service failure severity. Conversely, Introverts are considered to be quiet, composed (Desmond 2003: 233) and reserved (De Oliveira et al. 2013: 3). Introverts will not be moved by events in the external environment (Desmond 2003: 233).

### *Agreeableness*

Agreeableness encompasses traits such as a concern and sensitivity for others' needs (Kalshoven, Den Hartog & De Hoogh 2011: 353), selflessness, being sympathetic, understanding, compassionate, accommodating (Pineles et al. 2009: 48; Goetzmann et al. 2007: 400) and cooperative (Mendiburo-Seguel et al. 2015: 339). Opposed to Agreeableness, antagonism (John & Srivastava 1999: 102–138) relates to behaviour that is selfish, being uncooperative, harsh and rude (Goldberg 1992: 34). Consumers with high ratings on Agreeableness have a trusting personality (Whelan & Davies 2006: 398) and believe in behaving fairly (Kalshoven et al. 2011: 353), which could explain why the inclination to be dissatisfied was found to be related to Agreeableness (Thørgensen et al. 2009: 764). Based on the aforementioned inclination to be dissatisfied with unfair behaviour, it is expected that Agreeableness should be positively correlated with service failure severity, as a service failure might be viewed as an unfair exchange because the consumer suffers a loss.

### *Conscientiousness*

Conscientiousness infers that consumers would exercise self-regulation and self-control (Tonetti et al. 2009: 186). Conscientious consumers persevere and are disciplined (Komarraju, Karau & Schmeck 2009: 49), precise, dependable, determined and systematic (Goetzmann et al. 2007: 400). Impulsivity is the other side of the dimension of Conscientiousness (Goldberg 1990: 1228). Consumers who rate themselves high on Conscientiousness would therefore be efficient and organised, while consumers who rate themselves low on Conscientiousness would

more likely be careless and easy-going (De Oliveira et al. 2013: 3). Conscientiousness could result in an intolerance of service failures due to the perception that service providers should organise and plan better to avoid such failures. Impulsivity should thus be negatively correlated with service failure severity.

### *Neuroticism*

Irritability is allied with Neuroticism (Goldberg 1990: 1228). Neurotic consumers are likely to portray traits such as being anxious, highly-strung, moody, nervous, temperamental, tense, touchy (Goldberg 1992: 32) and sensitive (De Oliveira et al. 2013: 3). Neurotic individuals are less likely to communicate their expectations (Kalshoven et al. 2011: 354) to service providers. Neuroticism results in anger and resentment (Kim & Jang 2014: 118), as well as an inner struggle to control impulses and cope with irritations (Tonetti et al. 2009: 186) such as service failures. Therefore, it is expected that Neuroticism will be positively correlated with service failure severity. Based on the description of traits associated with Neuroticism, emotional stability is used to describe consumers who are not neurotic (Barrick & Mount 1991: 4; John & Srivastava 1999: 102–138). Emotionally stable consumers may become satisfied with lower quality for engagement in a relationship with their service provider compared with consumers who are less emotionally stable (Al-hawari 2015: 53), supporting the notion that emotional stability would be negatively correlated with service failure severity.

### *Openness*

Openness is allied to the possession of independent judgement (Goetzmann et al. 2007: 400). Imaginative, curious and broadminded consumers (Pineles et al. 2009: 48), who value new experiences (Goetzmann et al. 2007: 400) and creativity (Mendiburo-Seguel et al. 2015: 339), and show an interest in different habits and lifestyles (Tonetti et al. 2009: 186) would probably rate themselves highly on Openness. Not being open, or Closedness (John & Srivastava 1999: 102–138), is associated with cautiousness (De Oliveira et al. 2013: 3).

Al-hawari (2015: 53) found open consumers to portray more loyalty for lower-quality services than consumers who are not as open. Conversely, it has been argued that consumers who are high in Extraversion and Openness have a need for venting (Yoo & Gretzel 2011: 617). Therefore, it can be expected that consumers who rate themselves high on Extraversion and Openness will have the need to vent negative feelings when service failures occur, which will, in turn, result in a positive association with service failure severity.

### *Grouping the Big Five personality dimensions into the Big Two*

The shared variance among the Big Five dimensions should also be considered. While Extraversion and Agreeableness are viewed as social (interpersonal) traits (Al-hawari 2015: 53; Mendiburo-Seguel et al. 2015: 336), Conscientiousness, Neuroticism and Openness are considered as intrapersonal traits (Mendiburo-Seguel et al. 2015: 336). Recent marketing-related studies found that Extraversion, Neuroticism and Conscientiousness predict impulse buying (Thompson & Prendergast 2015: 219), while the relationships between consumer emotions and loyalty are strengthened through Extraversion, Agreeableness and Openness (Jani & Han 2015: 55). Furthermore, Neuroticism and Extraversion are the two dimensions most closely linked to wellbeing (Mendiburo-Seguel et al. 2015: 339).

The shared variance among the Big Five dimensions results in the identification of two higher order factors referred to as the Big Two (Digman 1997: 1253). Support for using the Big Two when examining the influence of personality is growing (Furnham, Crump, Batey & Chamorro-Premuzic 2009: 537, 539; Kalshoven et al. 2011: 352). DeYoung, Peterson and Higgins (2005: 852) used biological systems proposing a neuropsychological model to label the Big Two. Stability takes the shared variance of Agreeableness, Conscientiousness and emotional stability (the opposite of Neuroticism) into account. Stability refers to the ability to maintain a stable organisation to achieve goals (DeYoung et al. 2005: 828). In conclusion, Stability would possibly have a positive association with service failure severity, as a service failure would prevent the consumer from achieving their goals.

The two remaining dimensions of the Big Five, Extraversion and Openness, also vary together, and can be viewed as the second factor of the Big Two, namely Plasticity. Plasticity (or flexibility in behaviour and cognition) refers to the tendency to explore (DeYoung et al. 2005: 830). The aforementioned higher order factor, Plasticity, accounts for personal growth (Digman 1997: 1250), and these traits vary together as they are needed to incorporate any novel information that is due to an internal change in consumers or an environmental change. As Plasticity is used to incorporate changes and is associated with flexibility, it is expected to be negatively correlated with service failure severity.

### **Demographic variables considered in this study**

In addition to personality dimensions, demographic variables have been found to impact on service evaluation (Lee et al. 2011: 61; Palmer et al. 2000: 521). For this reason, age and gender were included in this study. The reasons for including these two demographic variables are briefly discussed.



### *Age*

It has been argued that ageing does not significantly influence personality (Digman 1990: 434). However, the counterargument that personality development seems to follow an inverted U-shaped pattern (Lucas & Donnellan 2011: 857) has also been presented. Negative associations between two personality dimensions, namely, Extraversion and Openness, and age were found. Conversely, a positive association between Agreeableness and age is evident (Lucas & Donnellan 2011: 858). With regard to service failure and recovery, it is argued that younger consumers are easier to satisfy with service recovery strategies than older consumers (Palmer et al. 2000: 521). For this reason, age may positively impact consumers' perceived service failure severity.

### *Gender*

Gender differences concerning the Big Five dimensions are regularly investigated (Ferguson 2004: 297). Adult females are considered to exhibit more Conscientiousness than males, while males are rated higher on Openness and lower on Neuroticism than females (Tonetti et al. 2009: 187). Based on the aforementioned gender differences concerning the personality dimensions and the contention that gender plays a significant role in evaluating service quality, satisfaction and repeat intentions (Lee et al. 2011: 61), gender could have an effect on service failure severity.

## **Research objectives**

During service failures, the exchange between two parties, namely the consumer and service provider, results in an unequal situation where one party experienced a loss based on expectations that were not met. For this reason, this study considers social exchange theory, the expectancy disconfirmation paradigm and prospect theory as frameworks for investigating service failure severity. Furthermore, the research question examined in this study adds trait theory of personality to the aforementioned theoretical considerations.

The main objective of this study is to determine the effects of personality dimensions on service failure severity. The intention of this study is to build theory to be further explored in future. To support the main objective, the following secondary objectives were formulated:

- Determine the perceived service failure severity of the scenario used for this study.
- Investigate the reliability and dimensionality of the Big Five Inventory (BFI) for the sample of this study, as the BFI has not been used in this context before and

because the items used in personality measures are expected to be influenced by situational factors (Lucas & Donnellan 2011: 857).

- Examine whether personality dimensions affect service failure severity.
- Determine whether demographic variables (age and gender) affect service failure severity.

## Methodology

### Target population of the study, sampling procedure and data collection

Descriptive, quantitative research was used for this study. The target population of this study included adults 18 years or older, including the four South African population groups (Asian/Indian, Black, Coloured and White) (Statistics South Africa 2011a: 6), all ages and both genders, resulting in a demographically diverse sample. The context for this study is the South African cellular industry, as research to date in this industry has been limited (Murphy 2011: 2). Prerequisites for participating in this study entailed respondents residing in the Johannesburg Metropolitan area and having used a cell phone network provider for at least three years. The Johannesburg Metropolitan area was chosen, as the population living in this area is demographically diverse (Statistics South Africa 2011b), while the last criterion was added to ensure that respondents would be able to evaluate the realism of the scenario used in this study. No sampling frame could be obtained from the cell phone network providers, therefore, non-probability convenience sampling was used.

Interviewer-administered questionnaires were fielded by trained fieldworkers who received remuneration for each completed questionnaire. The questionnaires were interviewer-administered as recommended by Bradley (2007: 128), because a service failure scenario had to be explained to respondents. The fieldworkers used personal, in-home interviews in their own residential areas in the Johannesburg Metropolitan area.

### Questionnaire design

The questionnaire was designed with a preamble, followed by screening questions and four sections. The preamble explained respondents' rights, which included that participation in the research was completely voluntary and anonymous. Section A of the questionnaire captured the patronage habits of respondents, for example, their current cell phone network provider.

Section B of the questionnaire dealt with the service failure scenario and measurement of the perceived service failure severity thereof. As previous research considered the influence of the type of service failure that was experienced (Kim & Jang 2014: 111; Smith et al. 1999: 357; Weun et al. 2004: 141), this study controlled for the influence of the type of service failure by keeping it constant by means of a scenario. Asking respondents to recall a service failure incident would result not only in the possibility of biases due to memory lapse (Smith et al. 1999: 362), but would also result in different types of service failures being recalled. Different types of service failures would influence the dependent variable of this study, namely, perceived service failure severity. Furthermore, using scenarios impacts on both external and internal validity. While the former is negatively associated with scenarios (Wen & Chi 2013: 307), internal validity is increased through the use of scenarios, as history, maturation, attrition, contamination, compensatory rivalry and resentful demoralisation are eliminated. In light of the theoretical contribution of this study, however, it is argued that external validity could be properly addressed in future research, as proposed by Taylor and Asmundson (2008: 32–33).

For this study, a billing error was chosen for the service failure scenario. The Independent Communications Authority of South Africa (2012: 28) found that 31% of the complaints on cell phone network providers relate to billing. Furthermore, billing errors by cell phone network providers outside South Africa also prevail (Chang et al. 2013: 374). For this reason, a billing error would be a believable scenario. The service failure scenario read: *After signing a contract with your cell phone network provider for 150 free minutes to any cell phone number during office hours, you receive your bill and see that you have in fact been charged for all the calls you made during office hours and not just for the calls exceeding the 150-minute frame.* Respondents had to indicate on a scale how severe the service they received from their cell phone network provider in the scenario was, specifically based on all their experiences with cell phone network providers (where 1 = strongly disagree, and 5 = strongly agree) (adapted from Palmer et al. 2000: 519).

Section C measured respondents' personalities with the 44 items of the Big Five Inventory (BFI), as presented by Benet-Martinez and John (1998: 749) and John and Srivastava (1999: 102–138), which has been found to be reliable and valid in the South African context of small businesses (Farrington 2012: 389–390). Respondents were presented with a number of characteristics that might or might not apply to them. Respondents were then asked to indicate on a scale of 1 to 5 (where 1 = strongly disagree, and 5 = strongly agree) the extent to which they agreed with the statements. The last section of the questionnaire obtained demographic details such as age and gender.

### *Pilot study of the questionnaire*

A pilot study of the questionnaire was done with 27 respondents from the study population to ensure feasibility and a clear understanding of the questionnaire, so as to be able to correct any problems respondents might have with the questionnaire (Zikmund & Babin 2010: 61–62). Two specific aspects will be discussed. Firstly, although the billing error used as the service failure scenario is more likely for contractual consumers, pre-paid consumers had no difficulty in imagining that they were experiencing the service failure scenario.

Secondly, respondents indicated some confusion with specific multiple adjective items measuring personality dimensions. It is argued that single trait adjectives might result in different interpretations amongst respondents (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger & Gough 2006: 87). Conversely, using multi-worded statements instead of single trait adjectives could result in the formation of the Big Five factor structure becoming less clear (Goldberg 1990: 1228). However, as respondents must understand all questions in the questionnaire, it was decided to retain only one of the trait adjectives of each personality item of the BFI after the pilot study. The opinions of four academic scholars were taken into consideration, and the adjective deemed ‘most understandable’ was kept in the questionnaire. For example, item 32, which originally read: *is considerate and kind to almost everyone*, was changed to: *kind to almost everyone*. Furthermore, the items were phrased in the first person, for example, item 32 read *I am kind to almost everyone*.

### Data analyses

The Statistical Package for Social Sciences (Version 22) was used for statistical analyses. For this study, a statistical significance level of 0.05 was used. After examining the reliability and dimensionality of the scales used in this study, a hierarchical (or sequential) regression analysis was performed to examine the effects of personality dimensions on service failure severity, while examining possible model improvement through additional demographic variables (age and gender). As hierarchical regression is used to investigate the relationships between a dependent variable and independent variables where the researcher determines the order in which the variables are entered into the regression equation (Tabachnick & Fidell 2013: 136, 143), this technique was considered appropriate.

## Results

### Sample profile

A total of 564 respondents participated in this study. The sample comprised mostly Black (33.2%) and White (28.7%) respondents, but also included Asian/

Indian (21.5%) and Coloured (16.7%) respondents. Slightly more than half the respondents were female (54.1%). Vodacom (43.3%), MTN (34.2%) and Cell C (16.5%) enjoyed more of the respondents' patronage than Telkom Mobile (3.2%) or Virgin Mobile (2.8%). Just over half the respondents had a contract with their cell phone network provider (52%). The majority of respondents spent between R101 and R250 (35.6%) or between R251 and R400 (26.2%) on their cell phone expenses per month. Respondents indicated their ages in an open space provided, allowing for a continuous variable ranging from 18 to 88 years (mean for age = 39.48).

### Exploratory factor analysis and internal consistency reliability for the BFI

As all BFI items with multiple adjectives were adapted for use in this study, an exploratory factor analysis (EFA) was done to examine the underlying dimensions of the scale and investigate convergent validity. The data were found to be suitable for factor analysis, as Bartlett's test of sphericity was significant ( $p < 0.001$ ) and the Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) was above 0.5 (MSA = 0.887). Maximum likelihood factor analysis with the direct Oblimin rotation method was used, as the dimensions of the BFI have been found to be correlated. It is important to note that it is reasonable to expect differences in the Big Five factor structure from study to study, where the basic meaning of the factors will remain constant if they are given the same labels (Goldberg 1990: 1221–1222).

From the exploratory factor analysis, nine factors emerged that explained 56.47% of the variance. One item (item 27) with a cross-loading on two factors above 0.4 was removed from the analysis and another EFA was conducted. Nine factors still emerged, explaining 56.67% of the variance. By considering factor loadings equal to or above 0.4, six factors were clearly identifiable, two factors had one item each, and one factor had no items with factor loadings equal to or above 0.4. Based on this grouping, the six factors with more than one item were retained (explaining 49.19% of the variance). The two factors with one item each were discarded, along with item 27 and all items with factor loadings below 0.4. In total, 17 items were removed from further analyses. Based on the grouping of items and the literature review, the factors were labelled. The six factors uncovered during the exploratory factor analysis could be labelled in terms of the theoretical overview on the Big Five dimensions. Table 1 presents the labelled factors with the number of items that loaded on each factor.

After uncovering and labelling the six factors that emerged from the data during the EFA, the internal consistencies (reliability) of these underlying dimensions of personality were assessed by calculating Cronbach's alpha coefficient values. Table 1 presents the Cronbach's alpha coefficient values ( $\alpha$ ) for the factors uncovered in this

study, where a value of 0.60 and higher is considered to indicate reliability (Bagozzi 1994: 18; Malhotra 2010: 319), particularly in personality studies (Rojas & Widiger 2014: 145–146).

**Table 1:** Personality dimensions uncovered, number of items in each dimension and Cronbach's alpha coefficient values

Factor	Label	n items	$\alpha$
1	Extraversion	Three	0.63
2	Agreeableness	Three	0.68
3	Antagonism	Three	0.69
4	Conscientiousness	Nine	0.82
5	Closedness	Two	0.78
6	Plasticity	Seven	0.84

Table 1 indicates that the six personality dimensions uncovered in this data all had Cronbach's alpha coefficient values above 0.6, indicating that each construct exhibits internal consistency (reliability). As this study investigated the possible effects of personality dimensions on perceived service failure severity, and six clear factors could be extracted, the factor structure did not prohibit further analyses.

## Descriptive statistics

Composite scores were calculated for the six personality dimensions uncovered in the data after the reliability was confirmed. The means and standard deviations (SD) for service failure severity and the six personality dimensions are presented in Table 2.

From Table 2 it can be deduced that the mean score of respondents' perceived service failure severity was 4.18. As one item was used to measure service failure severity, the frequencies were considered. Most respondents (51.8% and 28.4% respectively) indicated a five or four on the unlabelled Likert scale (where 5 = strongly agree), indicating that most respondents considered the billing error as severe. A further 11.5% of respondents indicated a three, 3.2% a two, and 5.1% one (where 1 = strongly disagree).

Furthermore, the mean scores of respondents indicated in Table 2 for Extraversion, Agreeableness, Antagonism, Conscientiousness, Closedness and Plasticity were above the midpoint of the scale.

**Table 2:** Means and standard deviations

Construct	Mean	SD
Service failure severity	4.18	1.09
Extraversion	3.32	0.98
Agreeableness	4.02	0.79
Antagonism	3.72	0.98
Conscientiousness	3.94	0.68
Closedness	3.24	1.21
Plasticity	3.69	0.80

### Hierarchical regression for examining the effects of personality dimensions and demographic variables on perceived service failure severity

To determine whether the six personality dimensions and demographic variables have effects on perceived service failure severity, a hierarchical regression was performed. Model 1 examined the main objective of this study, while Model 2 considered possible model improvement through additional demographic variables motivated in the literature review section. For Model 1, all six personality dimensions were entered into the hierarchical regression analysis, while Model 2 included demographic variables (age and gender). The order of the variables was thus specified by the researcher based on the theoretical overview presented and the objectives of the study. The tolerance (above 0.5) and the VIF (below 1.4) of all independent variables indicated that multi-collinearity was not present in the data set. Furthermore, the normal probability plot of standardised residuals as well as the scatterplot of standardised residuals indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. In combination, the six personality dimensions in Model 1 produced a significant adjusted  $R^2$  of 0.022, where  $F(1.17) = 3.108$  and  $p < 0.05$ . By including age and gender in Model 2, a significant adjusted  $R^2$  of 0.030, where  $F(1.16) = 3.180$ ,  $p < 0.05$ , was obtained. Table 3 presents the standardised beta coefficients ( $\beta$ ) with the associated statistical significance level (indicated by \*), adjusted squared multiple correlations (adjusted  $R^2$ ) and  $F$  statistic (with the associated  $p$ -value).

**Table 3:** Hierarchical regression analysis results

Independent variables in models	Model 1	Model 2
Extraversion	0.129*	0.122*
Agreeableness	0.090	0.096*
Antagonism	-0.026	-0.032
Conscientiousness	0.078	0.061
Closedness	-0.095	-0.094
Plasticity	-0.017	0.011
Age	Not included	0.111*
Gender	Not included	-0.012
<b>Adjusted R<sup>2</sup></b>	0.022	0.030
<b>F statistic (associated p-value)</b>	3.108 ( $p < 0.05$ )	3.180 ( $p < 0.05$ )

\*  $\beta$  significant at  $p < 0.05$

From the adjusted  $R^2$  presented in Table 3, it is evident that by including respondents' ages in Model 2, marginally more of the variance in the dependent variable was explained. With regard to respondents' six personality dimensions, Extraversion had a statistically significant positive effect in both Model 1 (where  $\beta = 0.129$ ,  $t(557) = 2.80$  and  $p < 0.05$ ) and Model 2 (where  $\beta = 0.122$ ,  $t(555) = 2.66$  and  $p < 0.05$ ). By adding age to the model, Agreeableness had a statistically significant positive effect on service failure severity in Model 2, where  $\beta = 0.096$ ,  $t(555) = 1.97$  and  $p < 0.05$ . Age also had a statistically significant positive effect on service failure severity  $\beta = 0.111$ ,  $t(555) = 2.56$  and  $p < 0.05$ . No other statistically significant effects were found. The significant effects were in the expected direction.

## Conclusions and managerial implications

As service failures cause consumers to experience a loss, based on prospect theory, they may experience distress. Personality has been found to exert a substantial effect on distress (Panayiotou, Kokkinos & Kapsou 2014: 562). Therefore, the effects of consumers' personality dimensions on service failure severity should be examined. The aforementioned is necessary, as service failure severity is an important consideration for service providers' service recovery in order to retain existing consumers (Chuang et al. 2012: 262).



The findings of this study indicate that most respondents perceived the billing error used as the service failure scenario to be severe. However, service providers can control billing errors. Therefore, attribution theory, where consumers consider controllable service failures as more severe (Chang et al. 2015: 50; Magnini et al. 2007: 221), is likely to be at play in this instance. It is recommended that service providers ensure proper technological systems for billing, which would lower (and could eliminate) the probability of billing errors.

The findings of this study do not support previous findings on the underlying dimensions of the BFI (Benet-Martinez & John 1998: 749; Farrington 2012: 389–390; John & Srivastava 1999: 102–138). The factor structure uncovered in this study indicated that respondents could identify with items measuring Extraversion, Agreeableness, Antagonism, Conscientiousness, Closedness and Plasticity. However, a different factor structure could be expected, as the items with multiple adjectives were adapted after the pilot study for comprehension purposes.

The uncovered effects of two personality factors, namely Extraversion and Agreeableness, on perceived service failure severity have important implications. Although it is often argued that personality dimensions do not offer practical value to service providers as they are not easily identifiable (Palmer et al. 2000: 524), the fact that only two personality dimensions affect service failure severity should be viewed in a positive light. Firstly, service providers should take Extraversion and Agreeableness dimensions into consideration when deciding on service recovery strategies, while both Extraversion and Agreeableness could be addressed with the same service recovery strategies. Antagonism, Conscientiousness, Closedness and Plasticity dimensions do not have to be considered.

Practically, when considering the Extraversion and Agreeableness traits, service providers should use a combination of restorative and apologetic service recovery strategies, such as personal email communication with consumers, when billing errors occur. Restorative service recovery is necessary, as fixing the problem is a basic necessity for service recovery to take place (Craighead, Karwan & Miller 2004: 316). Apologetic service recovery strategies are recommended, as Extraverted consumers enjoy interaction with others, and such personal communication would therefore be more effective in retaining consumers than a strategy approach based only on restorative service recovery. Furthermore, Agreeable consumers are trusting (Whelan & Davies 2006: 398) and regard fair behaviour as important (Kalshoven et al. 2011: 353), both of which are violated through service failure. Apologetic service recovery strategies would therefore also aid in re-establishing the trust broken by the service failure. This recommendation is supported by the notion that a combination of service recovery strategies should result in more positive outcomes for service providers

(Smith et al. 1999: 369; Wen & Chi 2013: 319) and that increased service failure severity warrants better service recovery strategies (Chuang et al. 2012: 267). Future research could also consider whether these two personality dimensions (Extraversion and Agreeableness) are the reasons why a combination of service recovery strategies tends to result in more effective service recovery.

The positive significant effect of age on perceived service failure severity again emphasises the value of this demographic variable. Palmer et al. (2000: 522) argue that a possible reason for this phenomenon is found in consumers' expectations, which would have more time to develop as they become older, resulting in higher industry expectations, which, in turn, increase perceived service failure severity. The importance of the expectancy disconfirmation paradigm to examine service failure severity should therefore not be underestimated. Furthermore, uncovering the significant positive effect of Agreeableness on service failure severity when age is added to the model illuminates the importance of considering age when examining consumer personality, as previously suggested (Lucas & Donnellan 2011: 858). Future research could consider age as a mediator of the effects found in this study.

In conclusion, the aforementioned findings extend the influence of trait theory of personality to service failure research. Even though service providers do not control the personality dimensions of their consumers, certain personality dimensions affect perceived service failure severity, and consumers' reactions to service provision therefore remain a very personal phenomenon. The unit deciding on the severity (the consumer) should thus remain the focus of investigation when examining service failure severity, rather than the service provided by the service provider.

## Limitations and recommendations for future research

This study has specific methodological limitations. Firstly, the factor structure of the BFI differed from previous studies, prohibiting the examination of the influence of all Big Five dimensions on service failure severity. Secondly, using convenience sampling, a scenario, and one service industry limits the generalisability of the results. Therefore, it is recommended that other research studies make use of probability sampling, real-life service failures or other scenarios, across multiple industries, with multiple items for measuring service failure severity.

Furthermore, service failure severity is always context specific. The context for this study is the South African cellular industry. The competitors in the South African cellular industry are limited to five (Peter 2013), which is different from countries where multiple role players operate. Moreover, consumer expectations are used for satisfaction judgements, and these are also influenced by previous experiences. For

this reason, the questions to be considered are whether consumers will perceive service failures in the South African cellular industry as more or less severe, and whether the expectations that consumers hold of South African cell phone network providers are different from those of consumers in other countries with other cell phone network providers.

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