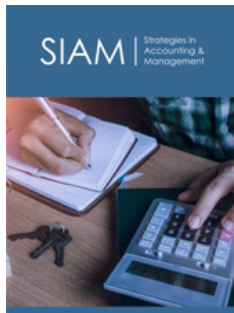


Perceived Psychological Contract Violation and Low Trust in Traditional Medical Providers and the Resulting Transition to Telemedicine Services

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Abstract

Studying the effects of Psychological Contract Violation (PCV) with traditional medical providers and trust in them as predictors of intentions to transition to mobile telemedicine apps, online survey analysis shows that patients are more likely to intend to try telemedicine when they have a high degree of trust in telemedicine providers and experienced PCV with traditional healthcare services. However, trust in traditional providers had no effect. PCV with traditional healthcare services was reduced by previous trying of online services as was trust in them. This suggests that PCV may have a cross-channel influence, unlike trust. Consequences are discussed.

Keywords: Telemedicine; Trust; Psychological contract violations; Technology acceptance

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Introduction

A psychological contract is a cognitive schema that represents a person's perceptions of her own obligations and another party's obligations in a relationship [1]. Those expectations include both explicit contractual details as well as informal and undocumented expectations. When explicit contractual details are broken there is possible legal recourse or at least the possible option of bringing it up explicitly with the other party. However, when informal and undocumented expectations are broken, there is little recourse because neither party explicitly said what their obligations in that specific context might be. One may expect that such cases of unmet informal and undocumented expectations would lead to Psychological Contract Violation (PCV), and its rational negative consequences on the relationship including emotional reaction involving disappointment, outrage, shock, resentment, and anger, and that could lead to negative attitudes and behaviors [2]. PCV also reduces trust in those involved and in others like them with an expected consequence of subsequent avoidance [3]. That applies to medical services too. Experiencing PCV, patients become more dissatisfied with the services Zhao et al. [4] and lose trust in the provider [5]. But there is more to PCV than what Pavlou [3] discussed in the context of eBay shoppers and the like. PCV might result in irrational cross-channel influences. Showing other examples of irrational cross-channel influences, people's emotions and attitudes caused by PCV with one party may transfer to others that are perceived as belonging to the same group [6]. In part, that transfer may be related to decreased trust in the provider with whom PCV was experienced as Pavlou [3] brought. Trust is a key element also in physician-patient relationships and influences patients' willingness to interact and communicate with their healthcare providers Yang et al. [7], an influence that extends to online services too [8]. Shedding new light on the role of PCV, this study shows a more complex picture. PCV in a traditional provider does, as might be expected, increase intentions to switch to an alternative online provider. However, rather unexpectedly, PCV has little effect on trust in traditional providers, maybe because initial expectations are already low.

That weak relationship between PCV in a traditional provider and trust in such traditional providers combined with how such PCV is strongly negatively correlated with prior use of the alternative online medical providers, might mean, and adding a new aspect to Pavlou [3], that PCV and its influence on behavioral intentions occurs in the broader context of tried out alternatives. Moreover, while PCV with traditional providers was slightly correlated with reduced trust in those providers, it was also slightly correlated with increased trust in the alternative online providers, suggesting that trust might indeed be a rational response Mayer et al. [9] that is based on experience with the other party Gefen et al. [10], including negative experience McKnight et al. [11], but that trust is also based on experience with other unrelated parties. Interestingly, however, trust in traditional providers and trust in online alternatives are themselves very highly positively correlated, suggesting another nuanced addition to the role of PCV in affecting trust, reemphasizing how much experience with relevant alternative services to the current service plays a central role in building trust. The positive correlation of trust in traditional providers and trust in online ones highlights the contagion of trust: Once one trusts one party, they are likely to equally trust another equivalent party even if they have little experience with it. That is, the data show that, much as with PCV, trust is also based on experience with other unrelated parties.

Data and Analysis

The survey was based on previously validated instruments: PCV with traditional service providers (PCVT) from Robinson [12], Trust in traditional providers (trust T) and trust in telemedicine providers (Trust M) from Gefen et al. [10] and Pavlou [3], Behavioral

Intentions (BIM) from Davis et al. [13]. The items appear in Table 1. All the items were measured on a 7-point Likert scale anchored at 1 for strongly agree and 7 for strongly disagree. The online survey was administered over a two-week period through Qualtrics, a data collection service. It is estimated that almost 20% of articles in leading management science journals use such services as Holtom et al. [14]. 263 complete responses were collected of whom 163 reported that they tried telemedicine. Those 163 were marked as Prior Use being 1, the others as 0. The sample included 36 (13.7%) respondents aged 18-24, 30 (11.4%) aged 25-34, 65 (24.7%) aged 35-44, 27 (10.3%) aged 45-64, and 105 (39.9%) aged 55-65. 107 (40.7%) were female, 156 (59.3%) were male. By income, 42 (16%) earned below \$20K, 52 (19.8%) between \$20K and \$35K, 47 (17.9%) between \$35K and \$50K, 55 (20.9%) between \$50K and \$80K, and 67 (25.5%) above \$80K. By education, 11 (4.2%) had less than high school graduate, 48 (18.3%) had high school graduate, 82 (31.2%) had some college or 2-year college degree, 60 (22.8%) had 4-year college graduate, and 62 (23.6%) had more than a 4-year college education. Most of the respondents (94.7%) had healthcare insurance, and the majority (60.8%) were employed. As to self-reported health condition, 61 (23.2%) reported as excellent, 83 (31.6%) as very good, 66 (25.15%) as good, 16 (6.1%) as somewhat good, 23 (8.7%) as average, 12 (4.6%) as poor, and 2 (0.8%) as very poor. The data were first analyzed with a Principal Component Analysis (PCA). Results for the components with an eigenvalue above 1 after a varimax rotation are shown in Table 1. The variables that were next analyzed in Generalized Linear Models (GLM) were created as the averages of the bold items in each column. Table 2 shows descriptive statistics of those variables.

Table 1: Items after a principal component analysis with a varimax rotation.

Survey Items	Rotated Factor Patterns			
	Trust in Telemedicine Providers (Trust M)	Trust in Traditional Providers (Trust T)	Psychological Contract Violation (PCVT)	Behavioral Intentions to Use Telemedicine Apps (BIM)
I was misled in the past by my health plan doctor.	0.124	-0.072	0.807	0.168
There were instances when I did not receive everything promised to me from my health plan doctor.	0.065	-0.048	0.898	0.12
It was my impression that my health plan provider did not live up to my expectations based on the contract between us.	0.069	-0.133	0.893	0.126
I was frustrated by how I was treated by my health plan doctor.	0.091	-0.112	0.864	0.116
My health plan doctors are trustworthy.	0.224	0.712	-0.043	0.025
I trust my health plan.	0.296	0.675	-0.059	0.055
My health plan doctors are competent.	0.177	0.759	-0.115	0.021
I am quite certain, I will receive excellent care from my health plan doctor.	0.236	0.849	-0.107	0.021
My health plan doctors provide care in a reliable manner.	0.207	0.894	-0.082	0.052
My mobile app doctors are trustworthy.	0.79	0.269	0.117	0.201
I trust the care I get from the mobile app.	0.839	0.276	0.101	0.216

My mobile app doctors are competent.	0.794	0.319	0.099	0.211
I am quite certain, I will receive excellent care from my mobile app doctor.	0.821	0.362	0.071	0.17
My mobile app doctors provide care in a reliable manner.	0.853	0.307	0.069	0.221
If I have access to a mobile care app to get primary care service, I intend to use it	0.56	0.095	0.247	0.587
I plan to experiment with mobile care apps to see how they work.	0.36	0.021	0.394	0.653
I intend to use mobile apps in the next year to get care.	0.471	0.066	0.257	0.81

Table 2: Survey items and principal component analysis.

*** $p < 0.01$, ** $p < 0.05$

Construct	Cronbach's Alpha	Mean	Std. Dev.	Correlation Coefficient			
				BIM	PCVT	Trust T	Trust M
Behavioral intentions to use (BIM)	0.91	3.21	1.73				
Perceived contract violation (PCVT)	0.94	4.31	1.93	.46***			
Trust in traditional healthcare services (Trust T)	0.91	1.89	0.97	.19***	-.15**		
Trust in healthcare services via mobile apps (Trust M)	0.96	2.5	1.29	.66***	.18***	.54***	
Prior Use		0.62	0.49	-.51***	-.33***	-0.01	-.47***

Demographics were added to the GLMs. These include age, measured as an ordinal variable Age LV with five levels, each representing one age group: 1 for 18-24 years old, 2 for 25-34 years old, 3 for 35-44 years old, 4 for 45-54 years old, and 5 for 55-65 years old. Education level was measured by a categorical variable which has the following levels: 8th grade or less (the base level), less than high school graduate, high-school graduate or GED, some college or 2-year college degree, 4-year college graduate, and more than 4-year college. The variable Income measures the respondent's income level with five levels: 1 for below \$20K, 2 for \$20K-\$35K, 3 for \$35K-\$50K, 4 for \$50K-\$80K, and 5 for more than \$80K. In addition, we included the following variables to control the influences of demographics: self-reported Health, Gender,

employed for employment status, and Insurance for whether the respondent has insurance plan coverage. Health, measures self-reported overall health condition: 1 for excellent, 2 for very good, 3 for good, 4 for somewhat good, 5 for average, 6 for poor, and 7 for very poor. Employed has the value of 1 if the respondent is employed, and 0 if otherwise. Insurance has the value of 1 if the respondent has any health insurance, and 0 if otherwise. Gender has the value of 1 if female, and 2 if male. Two GLMs were run, see Table 3. Model 1 includes only demographics, showing that Prior Use reduced intentions to use online portals while Age increases them. Model 2, adding the expected predictor variables, shows that in addition to the effects of demographics, PCVT and Trust M increase those intentions, but not so Trust T.

Table 3: GLM estimates.

Note: *** $p < 0.01$, ** $p < 0.05$

Variable	Model 1	Model 2
	Beta (Std.)	Beta (Std.)
Intercept	3.829 (1.163)***	1.360 (0.953)
Perceived contract violation (PCVT)		0.218 (0.042)***
Trust in traditional healthcare services (Trust T)		-0.104 (.099)
Trust in healthcare services via mobile apps (Trust M)		0.734 (0.078)***
Prior Use	-1.398 (0.200)***	-0.371 (0.181)**
Age LV	0.338 (0.070)***	0.151 (0.059)**
Gender	-0.076 (0.191)	-0.066 (0.152)
Income	-0.147 (0.079)	-0.085 (0.063)
Health	0.002 (0.068)	-0.055 (0.055)
Employed	-0.246 (0.218)	-0.279 (0.177)
Insurance	-0.634 (0.417)	-0.243 (0.345)

4-year college graduate	0.417 (1.040)	-0.211 (0.829)
High school graduate or GED	0.279 (1.036)	-0.162 (0.825)
More than 4-year college degree	0.290 (1.046)	-0.174 (0.832)
Some college or 2-year degree	0.311 (1.030)	-0.170 (0.820)
Some high school, but did not graduate	-0.130 (1.126)	-0.432 (0.90)
R-squared	0.368	0.608
F-statistics	12.15***	25.49***

Conclusion

PCV with traditional medical service providers is, as prior literature can be interpreted to suggest, an important predictor of intentions to try online, rather than traditional, medical services. Moreover, as expected, PCV does reduce trust in traditional service providers. But the story is more complicated than that and suggests the need to include prior experience with those alternative online services too. That prior experience is highly negatively correlated with trust in traditional medical service providers, suggesting that people's trust in traditional medical service providers are also based on their experience with alternative services. These cross-channel effects in both PCV and trust suggest new avenues for research and highlight that both trust and PCV occur in a social context that should not be ignored.

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