Faceless Internet Lawyers
– Can They Be Trusted?
A study of Usable Security for Legal Services

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Details on the context and background of work

Legal service has lagged behind other online services this is because lawyers are traditional risk adverse, trained to poke holes in ideas and look to the past for how things should be done. There have been many articles wrote about client confidentiality and solicitors duty of care, that have expressed a concern about internet safety. Having the clients trust and actually being trustworthy is of the utmost important to our legal system, if we are to move legal service on-line.

- We need to understand how we can design a system, that is both?
- A system that not only feels safe and secure but actually is.
- A system that is a joy to use and can be trusted the way that you would trust your solicitor, enabling the sharing of sensitive correspondence with the convenience of never having to leave your home.

Usable security, maybe the answer to this but it is a relatively new field in computer science and has provided some good theories that could be applied to legal services, yet there have been very few actual case studies.

Usability, Security, Usable security. Legal Services.

1. RESEARCH OBJECTIVES AND QUESTIONS

RQ1: How can we build online legal services that are trustworthy, usable and secure?

Objective 1, To find out what security methods can be implemented into User Experience (UX) Design methods, to create usable security methods?

Objective 2, To make recommendations that can help to make online legal service trustworthy.

2. KEY POINT OF THE LITERATURE REVIEW

2.1 Trust

Mobile Commerce activities and mobile payment systems have become increasingly popular, bringing new services like Google Wallet and Amazon Payments. M-Commerce differs from E-Commerce because it is often used for small amounts of money and also used in physical shops like Starbucks. The results of the research showed a mitigation of trust concerns because of the small amounts of money used for transactions and a transference of trust from past transactions within a physical establishment (Hillman & Neustaedter 2017).

Trust is important as it affects much of online behaviour, a long history of excellent sales service is seen as a predictor of future behaviour (Clemons et al. 2016).Understanding trust has substantial implications for economics of law (Ho & Huffman 2018).

Nobel prize winner Kenneth Arrow stressed the importance of trust, traditional trust games have shown that age, group size ,facial resemblance and attractiveness affect trust, from a theoretical perspective it is clear trust is a cognitive process (Zürn & Topolinski 2017).

The truth is as Humans beings, we are positively biased towards physically attractive people. Even children as young as 3 months showed selective

preferences towards attractive faces. There is a significant correlation between trustworthiness and physical attractiveness. Research shows that certain facial features are optimized for attractiveness such as the distance between eyes, length of face, distance between eyes and mouth. Cognitive trust plays a greater role in temporary or less personal relationships, such as GUI's. (Yuksel et al. 2017).

2.2 Online Trust

On-line trust differs across different countries and the more digitally developed the country the greater the expectation from the supplier, who has to work harder to give assurances in order to gain the clients trust. For Legal services Privacy, security accountability, ease of payment and good user flow are the greatest promoters of trust (Chakravorti et al. 2018).

Customers with high overall trust demonstrate a higher intention to purchase online, providing the customer with a worthwhile experience and reduced effort specially between service and payment is vital to guarantee customer satisfaction. Whereas Competence, integrity and benevolence which are dimensions of trust affect intention to purchase (Oliveira et al. 2017).

Website design is a critical part of gaining on-line trust, the design can emphasize different site characteristics such as, privacy, navigation or order fulfilment. A study of 6831 consumers using structural equation analysis looked at online trust across different site categories and found that different business sectors have different behavioural intent. In legal sites you have both a financial and information risk, influential determinants of a legal site would be Privacy, Security, good advice and an absence of errors (Bart et al. 2005).
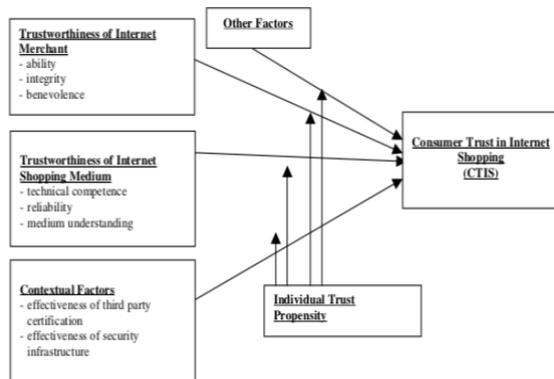
A Trust Model for consumer Shopping
(Lee & Turban 2001)

2.3 Security and providing an actual trustworthy System

However, adding security can be trickier than you would expect because security products are designed to keep systems safe and are only effective if people use them correctly, people will circumvent security if it stands in the way of achieving their objective goal easily. Behavioural sciences have mapped out several promising areas to help make security more usable these areas are heuristics, biases, framing and reducing cognitive load. Caputo states that the next step in advancing research in this area will be in making security usable by integrating actions that include security at every stage of the software development (Caputo et al. 2016).

Games, such as "Elevation of privilege" trains developers to threat model this will help to make programs more resilient. This is a new way of thinking because threat models are **not** normally formed while systems are being developed (Shostack n.d.).

Because security has traditionally only been thought of after the product has been design vulnerability detection has been developed as late detection and this method does not encourage secure programming.

Early detection improves awareness among developers and vulnerabilities are fixed promptly. Case studies at software companies have shown that even developers with several years of development experience have limited knowledge about security vulnerabilities and that there is a need for an early detection tool to be used during development, the study created an eclipse plug in to test developers code against the 10 common security flaws. Adding such tools to text editors could help to train developers to create more secure code. This problem has occurred because developers have been focused on making something that works, not something that works and keeps your data safe. Various other techniques were tested and Data flow analysis was also found to be one of the most useful tools to help find vulnerability and aid in finding a solution early in the development process (Sampaio & Garcia 2016).

As well as an inspirational new way of thinking about security, technological changes are also happening in the way people can collaborate securely. Blockchain is a ledger technology used for keeping track of transactions over the internet and could be the future of legal documentation it could be used for the drafting of wills and fast probation (Sreehari et al. 2017).

Law firms that adapt will have a clear competitive advantage, Innovation offers enormous opportunities for solicitors to offer their clients a more accessible and efficient service. If solicitors are to survive in this changing world they will have to be willing to try to work in a new way, creating an amazing user experience on-line, offering smooth, quick customer on-boarding and intuitive account functionality (Law Society, 2017).

3. Problem Statements

There is a need to develop software that can deliver affordable legal services.

The unmet need for legal services in the United States is 85%, this highlights a need for an innovation solution. Unfortunately, lawyers are trained to look to the past for answers (Smith 2015).

Block chain technology is new

Emerging technologies are new and legal precedents has yet to be set and problems will arise. If there is an error in the code who is responsible if a loss to one or two parties occurs? Liability could not be assigned to a party (Giancaspro 2017).

Software security

Developers have priorities such as functionality and optimizing the end user experience coupled with time-to-market security is not part of their overall goal (Acar et al. 2016).

One solution would be that all UK software should be required to have a British Standards Software Security Certificate this would not only possible but desired, Tiger scheme, CHECK and CREST schemes have already laid down the foundations (Knowles et al. 2016).

4 Research Approach and Methodology

4.1 First year

Literature reviews

Will include: Online legal services, usable security, online trust, interface features and site trustworthiness, trust propensity questionnaires, quantitative analysis, thematic analysis.

Questionnaire Online Trust & Security with Legal Services

A survey instrument assessing user expectations of Usable Security and understanding of user perspectives of online legal services and trustworthy digital experiences will be developed. Following the Lee and Turban model, questions will focus on provider trust qualities, perceived trust and actual security.

The questionnaire will be developed based on the literature review and will build on existing questionnaires if any appropriate. It will include the incorporation of questions from a validated Trust Propensity questionnaire (or sub-scale). The questionnaires will be administered online to 50 people that are either studying law or working in legal services.

The legal sector is at a high risk of attack and it is paramount that usable security recommendations can be made to this sector. In order to make the recommendations as per my research question 3, It is important to understand where the greatest risks to security lie across the legal sector. An early draft questionnaire is provided in Appendix B.

Focus Group – Perception of online trust and questionnaire refinement

Hold a focus group with 8 participants, who have had a recent interaction with legal services to discuss end users' perception of online trust and their willingness to engage with online legal services. Gain an understanding of user's perceptions of security and themes drawn from the literature survey. On-line legal services have developed several style business models: auction, comparison and own business. The group will look at 5 sites and discuss, their opinions on each of the sites and whether they believe the site would give a trustworthy experience – see Appendix B for an initial draft of the focus group themes and site selection. Appendix A

Data Analysis

The data from the focus group and questionnaires will be analysed using thematic analysis and statistical tests respectively. The results will be used to inform the design of the legal forms/services prototype in Year 2.

4.2 Year 2

Literature review – security methods, UX Design methods, experimental design, inspection methods, incorporating security methods into UX Design methods.

Building online legal forms

This PhD will focus on a particular area of legal services, related to tenancy agreements, something that many students engage with. In Year 2, the tasks, processes and forms used to support tenancy will be identified and provided as web-based forms.

- **Hierarchical Task Analysis** will be used to decompose the legal services and forms to facilitate the design process, simplification and low fidelity design alternatives.

- **Low fidelity designs** and low effort wireframes will be developed to explore features.
- **Security enhancements** will be added to the experience and their impact on factors such as aesthetic features, latency, etc. will be considered.
- **Designs** will emphasise trust qualities for digital legal service providers.

The **Prototype solutions** will incorporate UXD characteristics and security features identified in literature; and will aim to incorporate the trust features identified from the questionnaire results and focus group.

Heuristic evaluation & Security Assessment

Aggregate heuristics (from Shneiderman, Neilsen, etc.) and develop heuristics for trust, sense of security, etc. focusing on Perceived Trust and Trust Qualities. Using 3 Human Computer Interaction experts perform a Heuristic Analysis with the prototypical legal service. Refine and update prototype.

Using a similar approach to Heuristic Evaluation but focusing on the security, a security test will be performed to assess the level of actual security (Trust Qualities and Actual Security). The software will be improved if flaws found.

Develop Experimental Protocol for Year 3 studies

The experimental design to assess how trustworthy, secure and usable the prototype for the tenancy legal service forms is will be developed. This will involve the development of the scenario or roleplay that the user will engage in within the experiment, for example, starting a new tenancy, ending the tenancy and problem scenarios related to the contract (e.g. repairs not done, rent not paid, etc.). It needed to assess the user's experience of online legal services.

4.3 Year 3

Literature review: update on earlier reviews to keep work current.

Experimental study Pilot– 20 users

This will include questionnaires, interviews, videoed observations and interactions as detailed in the experimental protocol developed in Year 2. The goal will be to gather user opinions and perspectives of their experience and to evaluate the experiences through exploring the data logged during the experiments.

Improvement of Prototype & Protocol

As I will be developing using an agile method I will take the experimental findings and improve the software, refining, piloting and improving the prototype.

In parallel, the experimental protocol will be improved and refined if necessary.

Experimental Study Summative – 50 users

This final summative study will assess the trustworthiness of the legal services system with 50 participants.

4.4 Year 4

Literature Review: update on earlier reviews to keep work current.

Analysis

Analyse the results from the formative and summative experiments of year 4, identifying features and aspects that increase the sense of trust, security and usability of legal services.

Interpretation

Refinement and extension of trust evaluation approach based on results and advances made through this research.

5 Initial Results

Results from the focus group (actual script in appendix b)

The majority of the focus group used a phone or laptop to access the internet.

This group had mainly used legal services for property related issues. buying or renting property. One had used them for a contract of employment.

None of the group could remember any information being given to them about third party regulation. But they all seem to think that their solicitors would have been regulated and used phrases like, welcome pack or on the website.

The group where divided about trusting a fully on-line service. This was due to their individual trust propensities and passed on-line experiences. Strangely the couples that where buying property and had the largest amount of risk would have trusted a fully on-line service, but the others would not have however, a partly on-line service was fully acceptable. The whole group agreed that access to legal services 24/7 would be a good thing.

When asked about how they felt about sharing sensitive information on-line only one would not do it. The rest of the group seemed more task orientated, willing to share on-line because sometimes you just have to get the job done. The majority assumed that a legal firm would have a secure site so there was no problem.

Features that made them feel safe on-line where the padlock, green URL, HTTPS certified, good graphics, third party payments options like PayPal.

Features that made them feel insecure where Pop-ups, redirects and old-fashioned style sites.

When it came to how much they would expect a full on-line service to cost in comparison to a traditional lawyer they all thought it would be cheaper. Various reasons where given like they have no premises, they have the benefit of working from home, it could be an AI system. However, a greater service would be expected, more accessible and quicker to responses.

Recommendations seemed to be the key in why a specific solicitor had been chosen, if no recommendations had been given this resulted in research. Research was done by looking at qualifications on LinkedIn and Judging responses.
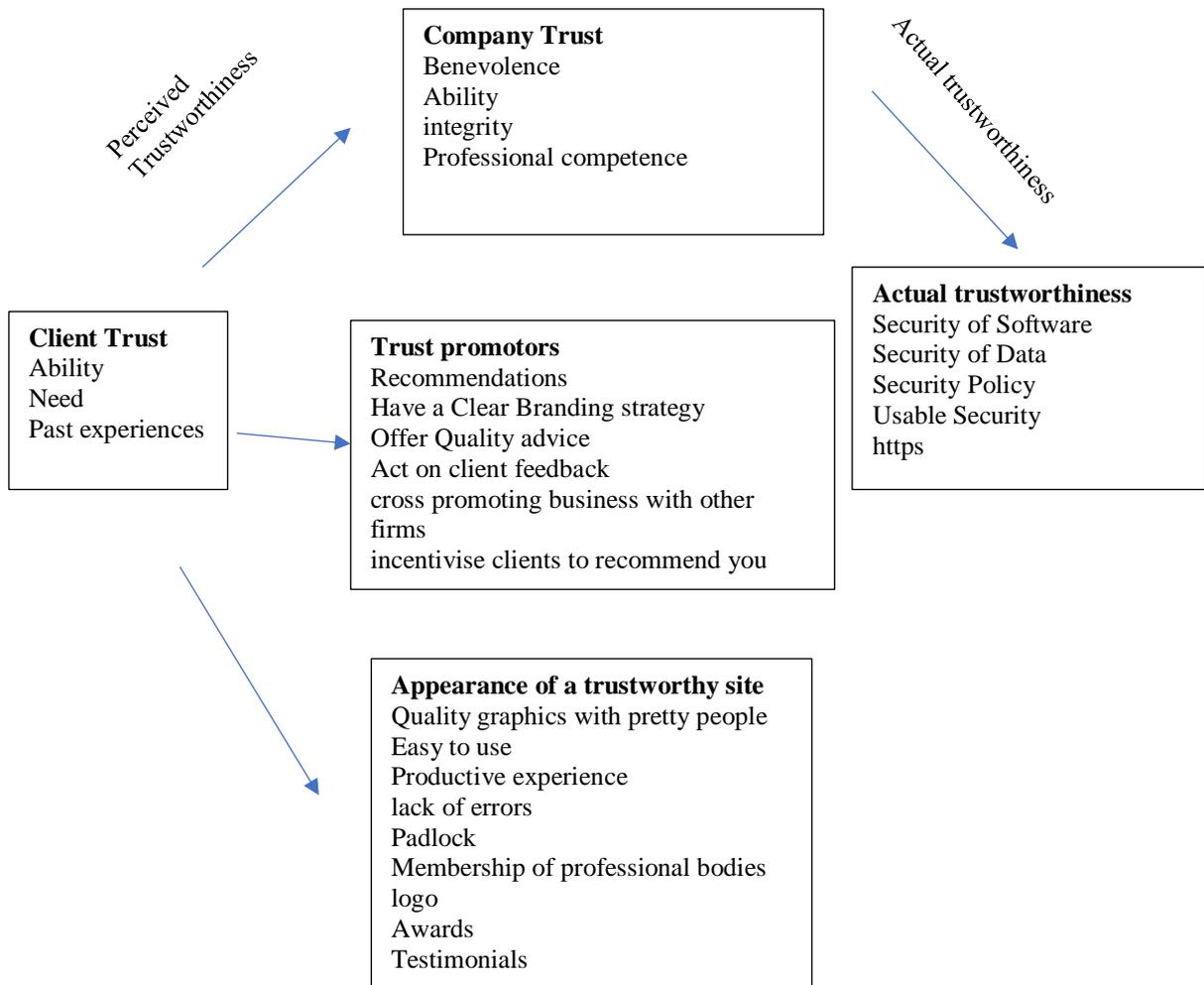
Loss of trust was caused when a law firm lost important documentation. Even though the firm had put the error right the client would not use that firm again or recommend them.

Other negative on-line experiences that were mentioned was goods not been delivered on time, which led to a negative review.

Free goods being offered as an incentive to join, but the task of claiming the free offer was made so hard the full membership was cancelled. Leading to the user feeling like it was con.

Even though the group had mentioned negative experiences they would all continue to use the internet for goods and services.

Proposed Trust Model for Legal services

Perceived Trustworthiness

Actual trustworthiness

Company Trust
Benevolence
Ability
integrity
Professional competence

Client Trust
Ability
Need
Past experiences

Trust promotors
Recommendations
Have a Clear Branding strategy
Offer Quality advice
Act on client feedback
cross promoting business with other firms
incentivise clients to recommend you

Actual trustworthiness
Security of Software
Security of Data
Security Policy
Usable Security
https

Appearance of a trustworthy site
Quality graphics with pretty people
Easy to use
Productive experience
lack of errors
Padlock
Membership of professional bodies
logo
Awards
Testimonials

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