

DESIGNING LOST AND FOUND WEB APPLICATIONS, BASED ON TRUSTED THIRD PARTY MODEL

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Abstract: Items are becoming more valuable and technology is changing expectations of customers and business. This paper analyzes current lost and found web applications and proposes design of lost and found web applications based on trusted third party (TTP) model for enhancing legitimacy and trust when dealing with lost and found valuables. Research findings indicate that the issue of trust and legitimacy has not been addressed in existing applications.

Keywords: Trusted Third Party (TTP), Software as a Service (SaaS)

Introduction

Businesses recover customer valuables that are left in their premises but in some cases fails to share information of found items either online or on print media due to fear of illegal claims, as a result found items accumulate and they never get back to their owners.

Legitimacy and trust are important issues that are difficult to establish when dealing with lost and found items. When customers search online for lost and found items they may lack trust with the content posted and have no mechanism of verification. Trust in the context of e-Commerce is about understanding perceived legitimacy of product. Lack of trust in consumer minds may deter them from doing e-commerce. Thus, companies must convince consumers and consumers must also convince business that they are legitimate and trustworthy (Lah, Hussin, & Dahlan, 2005).

This paper analyzes three lost and found web applications used in Kenya and proposes a new approach of designing lost and found applications based on TTP model for enhancing trust and legitimacy between businesses and customers when dealing with lost and found items.

Objectives

1. To identify the gaps in existing online lost and found applications.
2. To develop a trusted third party model for lost and found web applications

Legitimacy and Trust in E-Commerce

Trust in e-commerce is established by trusted third party (TTP) that must be trusted by all users and it acts as arbiter in case of a dispute. On moving to the electronic world, businesses seek to build trust among consumers in order to sell their product or services and consumers seek trust before interacting with a vendor to acquire their products or services, TTP seek to re-assure the consumer that control has been established (Head& Hassanein, 2002).

On an e-market, a consumer conduct a transaction only when they have sense of controlling the risks involved, having acquired an appropriate degree of trust and confidence. Trust and confidence do not occur by chance. They need to be systematically developed through a process of building, enhancing and maintaining. Trust and confidence evolve, they can grow or diminish, and are affected by the actions of the stakeholders (Chawdhry, Masera & Wilikens, 2002).

According to (Head& Hassanein, 2002) TTP can serve as privacy, security or business credibility and reliability in e-commerce. In development of technologies and their subsequent deployment, consumers are generally able to implement a set of utilities for managing the information assets involved in an e-commerce transaction (Chawdhry, Masera & Wilikens, 2002).

The unclear and underdeveloped legal frameworks in e-commerce increases the uncertainty and risk in, some institutional mechanisms used in online marketplaces do not enjoy the same legal protection and enforcement provided by governmental agencies in traditional markets. Trust and legitimacy are important factor under conditions of uncertainty and risk and lack of trust is one of the most frequently cited reasons for consumers not transacting online (Huang, LI, & Lin, 2007).

Web Applications

Web applications are distributed client-server applications in which a web browser provides the user interface, the client browser and the server side exchange protocol messages represented as HTTP (Hypertext Transfer Protocol) requests and responses. Web applications are a critical part of internet infrastructure and are used for banking, email, financial management, online shopping, auctions, social networking and the corporation's (Rewatkar & Lanjewar, 2010). Software are now being deployed as Software- as- a –Service (SaaS), According to AWS (Amazon Webs Services, 2010), Software- as- a –Service (SaaS) is an application delivery model that enables users to utilize a software solution over the Internet and issues to deal with trust and legitimacy need to be addressed when designing and deploying such applications.

Methodology

This study employed comparative analysis that involved analyzing the current lost and found web applications in Kenya. The study focused on three application commonly used in Kenya based on Google search results. The first one was zipate, which is a Lost and found online application project by umoja ICT youth group the project was funded by the Kenya youth development fund. The second one was Lost and found document center which is a web application for lost and found items services whose aim is getting lost items back to their rightful owners. The third one was lost and found Kenya which is a facebook page created for recovering lost documents ID cards, Pets, Animals and Gadget.

Results

Zipate (2014) offers a solution to post found items and to search for lost items. The module for posting found items have no clear method of determining the legitimacy of the item posted. Customers can search for the lost items but the system displays the result of the person who has posted the item. This is a major weakness as any person can claim to be the owner of that item.

Zipate have no option of registering businesses who would like to post found items. Businesses would like to post found items that are left in their premises by their customers for examples hotels, amusement parks, libraries and others (Zipate, 2014).

Lost and found document center have modules to post lost and found items and incorporate SMS (Short Messaging Service) to report lost items or to search for found items. The database has very few reported lost and found items and there is no method of determining the legitimacy of the item being posted (Lost and Found Document center, 2014).

Social media is another commonly used avenue to post lost and found items, facebook and twitter allows members to join groups where they able to post lost and found items, for example Lost and-Found -Kenya have seventy users and they have not been classified as customers or businesses, it's very difficult to search for found or lost items and there is also no privacy of personal information of the person who posted lost and found items (Lost and Found Kenya, 2014).

Reference	Technology	Legitimacy	Trustworthiness	Revenue Model	Searching
Zipate (2014)	-Contain module to post lost and found items -Web application, App engine -linked to facebook	-There is no method of determining the legitimacy of available data -There is no arbiter	-Users are responsible for determining the trustworthiness of posted data -There are no terms and conditions	-Free to post lost and found items -There is no clear revenue module	-The search discloses the details of the person who have posted - There is no option for claiming posted items -Limited content
Lost and Found Kenya, (2014)	-Does not have module to post lost and found items, everything is posted in one section -Facebook platform	-There is no method of determining the legitimacy of available data - There is no arbiter	-Users are responsible for determining the trustworthiness of posted data. -There are no terms and conditions	-Free to post lost and found items -There is no clear revenue module -	-No search function and personal information are available -There is no option for claiming posted items - Limited content
Lost and Found Document center (2014).	-Contain module to post lost and found items -Include option to report lost item using SMS -Web application -Linked to facebook and twitter	-There is no method of determining the legitimacy of available data - There is no arbiter	-Users are responsible for determining the trustworthiness of posted data. -There are no terms and conditions	-Revenue model is by using SMS to search for found items which only works when using safaricom network - Advertisement	-The search functionality system - There is no option for claiming posted items - Limited content

Table 1 : Summary of comparative analysis

Discussion

The data above indicates that there are limited resources to manage lost and found items and available solutions are in outdated and have not dealt with the issue of trust and legitimacy. Results indicate that there is no clear dominate business and revenue models. There is a big market opportunity for lost and found solution that will address the issue of trust and legitimacy. Possible market segments includes amusement parks, hotels, shopping centres, universities, public libraries, airports, transportation services, stadiums, movie theatres, private offices, public offices among others.

Trusted third party model

A Trusted Third Party (TTP) is an organisation which has been authorised by another organisation to manage or process identifiable data for a specific purpose (Adls, 2014). According to Arbadi (2014), trusted third parties can contribute to both secrecy and integrity properties in distributed systems. In particular, when two nodes A and B communicate, the trusted third party embedded Check and certify the messages that A sends to B.

Designing web application for lost and found items requires a TTP. Lost and found web application will allow businesses to share data on found items, customers to search for found items and a trusted third party to determine the legitimacy of what the businesses and customers post. TTP will make content available to the public after verification and all customer claims will be evaluated by TTP before issuing contact details to customers on where to pick their lost items.

Figure 1 below shows proposed model consisting of business, customer and a trusted third party where legitimacy of posted items are evaluated and all claims are authenticated before disclosing private data.

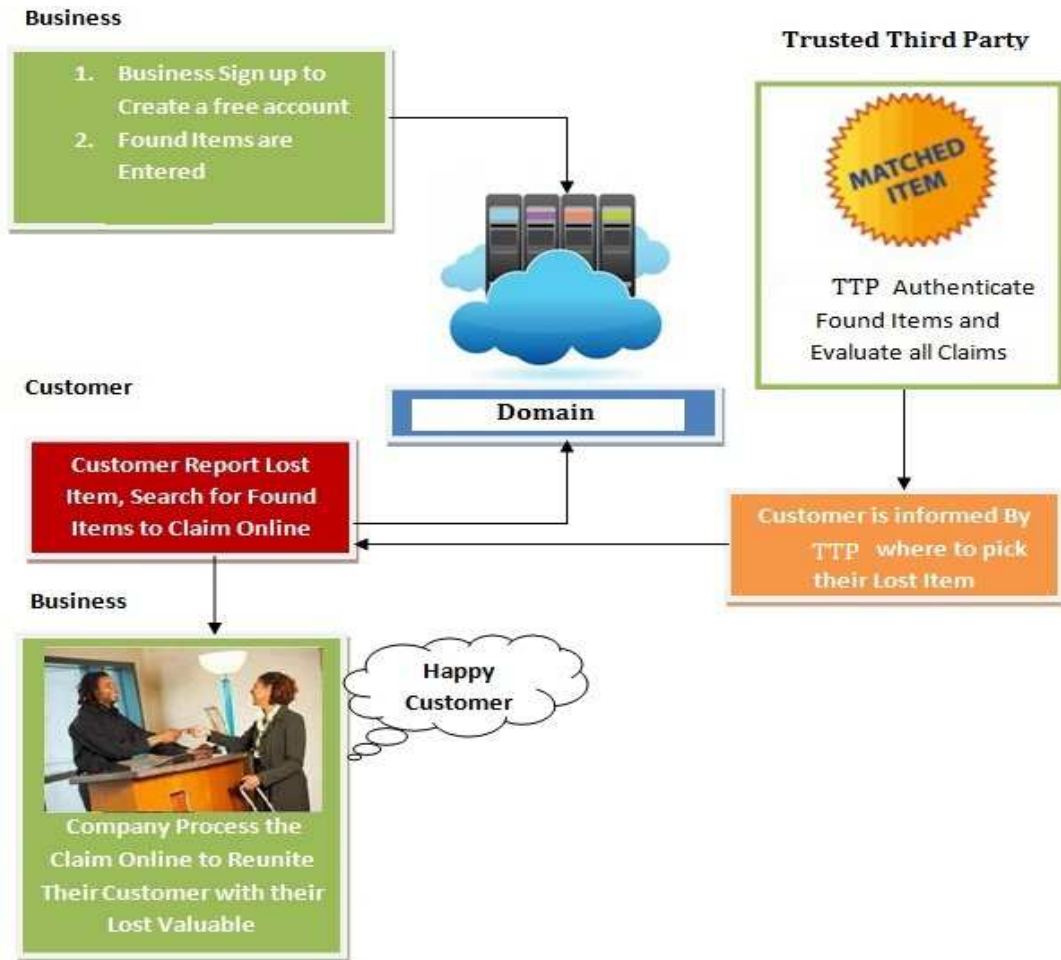


Figure 1: Trusted third party model for lost and found web applications(Author)

Conclusions and Recommendations

This study found that, there are limited and outdated web applications for managing lost and found items and the existing applications have failed to address the issue of legitimacy and trust. Items are becoming more valuable and technology is changing the expectations of customers and businesses, hence the need to develop lost and found web applications based on trusted third party model. The Researcher recommends development of web application for lost and found items based on proposed model and evaluation of proposed system to determine its overall effectiveness to customers and businesses.

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