

WEB TRUST PRINCIPLES AND MECHANISMS GUIDING ELECTRONIC BUSINESS FOR SUSTAINABLE IMPLEMENTATION IN NIGERIA

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Abstract

Trust is one of the mainstays of business, whether traditionally or electronically transacted. But as more and more individuals and businesses participate in electronic business, it would appear that much of what supports trust in the traditional business setting is unavailable online (the Web). It is against the backdrop that this paper attempts to explore the nature of trust online, identify major principles underpinning the concept of trust, and the online mechanisms that promote it. Finally, a new hybrid form of trust model is proposed, which integrates first party information, second party opinions, and third party ratings, and thus, addresses all the principles of trust.

Introduction

The condition of trust is an important enabler to personal and business transactions of many kinds, even where there are sophisticated legal remedies available. As traditional frameworks of business evolve rapidly in electronic business or e-business, it is becoming obvious to all players that the underlying trust principles of the offline world are not present in the online world in the same way or to the same degree. The absence of a universal consensus on how trust is established in virtual markets and the difficulties in communicating tailored information needed to develop trust among disparate parties is one of the most significant inhibitors to the development of e-business (Friedman, 2000).

Trust is a belief or expectation that the word or promise by the seller can be relied upon and the seller will not take advantage of the buyer's vulnerability (Geyskens, 1998). Trust and risk are closely interrelated. Risk is the core of trust, in that trust is the degree to which a trustor holds a positive attitude towards the trustee's goodwill and reliability in a risky exchange situation.

Consumer trust is built upon information that affects a company's reputation, policies, practices and performance history. It can be communicated directly by the company, or by other parties that have interacted with the company, or by trusted third parties. These information sources are referred to as first party, second party and third party information sources respectively. In recent past, a number of different mechanisms have evolved on the Web to deliver information from all these sources to the consumer.

First party information is communicated online by businesses through various types of information which include: privacy and security statements, mission statements, guarantees and assurances, fulfillment schedules, past performance reports, investor performance, executive biographies, and customer support phone numbers and addresses. The advantage of first party information in establishing trust is the directness of the communication between trading parties. It is however disadvantageous because it is not unbiased and not subject to independent validation or verification.

Second party opinions are captured on the Web through the use of reputation systems that capture word - of - mouth feedback and a history of the previous performance of these parties. The primary advantage here in establishing trust is that it communicates the experience of others in performing similar transactions. The disadvantages are that such information is typically unstructured, potentially unreliable, and comes from unknown or anonymous sources.

Third party ratings are communicated online in a number of ways including seals of approval, trustmarks, directories of trusted sites, trust intermediaries, and label bureaus. The use of seals of approval and trustmarks are most popular means of communicating trusted third-party ratings on the Web as at today. Research has shown that displaying licensed Web based seals of approval can help to establish trust worthiness (Cheskin, 2000). However, these seals can easily lose the credibility if they fail to enforce the standards they represent.

It is against the background that this paper attempts to explore the nature of trust online in a set of principles; examine reputation systems and label bureaus mechanisms as examples of second

and third party rating systems respectively. Also a new hybrid form of trust model that integrates first party information, second party opinions, and third party ratings in a single system that addresses all the principles of trust is proposed; the significance of Web trust principles in electronic business; and a conclusion that summarizes the central arguments of the paper.

Research Objective

The purpose of this paper is to examine those trust principles and mechanisms that support the promotion of online trust. This involves the analysis of how substantive knowledge about how trust is formed, maintained and lost through these trust principles in an electronic environment.

Web Trust in Perspectives

The nature of trust can be described as a dynamic process that deepens or retreats as a function of experience. (Cheskin. 1999). Once consumers have been provided with a sense of security, their focus changes to the five signifiers of trust, namely: brand, navigation, fulfilment, presentation, and technology. Real trust builds through a company's actual behaviour towards its customers over time. (Nielson, 1999). However, since trust is based on experience over time, establishing initial trust can be a major challenge to newcomers in e-business, particularly those who do not have well established off-line brands (Egger, 2000). Without initial trust, merchants cannot build a good transaction history and without a good transaction history consumers may not build trust in these merchants. Therefore a high entry barrier for new merchants, particularly for small and medium sized businesses will remain, unless effective reliance principles and mechanisms aimed at enhancing system trust are developed.

E-business can also be looked at from the perspective of distance transactions that have much in common with mail order catalogues and telephone orders. (Egger, 2000). Distance transactions often provide insufficient information about the merchant, goods and services offered. While the consumers are required to accept 'the risk of prior performance' which places them in a vulnerable position, they generally have no opportunity to see and feel products, or to evaluate a service in detail before making a purchase decision. Information about the physical location of a merchant is often missing, as well as the body language and gestures of customers staff. The information deficiencies inherent in distance transactions provide valuable clues for developing principles and mechanisms to communicate trustworthiness through the Web interface and to generate confidence in the e-business experience.

Web Trust Principles

From traditional business, consumer trust is seen to be more easily developed when the consumer has a positive trusting stance in general, has had prior interactions with the merchant, interacts with a knowledgeable salesperson with similar or familiar background to the consumer, is protected by strong social and legal structures, and expects to be patronizing the merchant for a prolonged period (Geyskens, 1998 pp. 231-234). However, many of these trust sources are not easily available to businesses and consumers in the online world of electronic businesses. In the offline setting, a consumer's trust is affected by the seller's investments in physical buildings, facilities, and personnel, while in the online, concerns over the impersonal electronic store-front, the low cost of entry and exit in the Web marketplace, lead many consumers to regard internet merchants as "fly-by- night" operators (Doney, P. Cannon, J. and Mullen, M. 1998).

It is against the background that this paper outlines a number of new and emerging consumer reliance principles for sustainable electronic business in Nigeria, not in any order:

Identity Trust

Trust accrues over time between individuals and companies that build a shared history of positive interactions. That is, trust depends on identity, the condition of being distinguishable from others. Without identity, there is no way to group together separate interactions into a history. In offline, identity can be established by visual recognition or by authoritative identity tokens such as driver's licenses and passports. But in online, individuals and companies may have virtual identities whose mapping to their identities in the offline world are masked. However, so long as these identities

tokens remain constant they can be used to tie together individual interactions into a history of interaction in electronic business.

Information Trust

To trust someone or some organisation, one must first 'get to know them'. In the business setting the information required to know each party has many dimensions. This is because it must capture knowledge about complex behaviours surrounding issues such as privacy, reliability and past performance. In the online, there are many dimensions to trust and a lot more information may have to be communicated to get the same level of trust engendered from the personal contact and word of mouth in the offline world. Hence, most business sites currently describe themselves in terms of information about security, privacy, guarantees, and assurances.

Risk Perception Trust

Trust and risk are closely interrelated. Risk is the core of trust in that trust is the degree to which a truster holds a positive attitude toward the trustee's goodwill and reliability in a risky exchange situation. Trust is the non-rational choice of a person faced with an uncertain event in which the expected loss was greater than the expected gain (Huberman, Franklin, and Hogg, 1999). Trust evolves through the process of a growth of knowledge and understanding of the people with whom individuals interact, plus the actual experience of working with them. To know somebody, therefore, is by becoming aware of the extent of their commitment to others plus the circumstances under which people can trust them. Hence, the recognition or awareness of another's trustworthiness may only arise, not through everyday experiences, but through their behaviour in exceptional and infrequently occurring circumstances.

Reciprocity Trust

It is obvious that trust is intimately associated with risk and when a trustee realizes that a truster has taken considerable risk in trusting him, he tends to be motivated to behave in a trustworthy manner. Such reciprocity has been found to be a key element in trust building. A firm with a reputation for being honest, fair and trustworthy has the necessary first piece of evidence for other parties to undertake some initial risk and pursue transactions with it. Hence, when a person found that a group of people with whom he or she had conducted economic transactions in the past had acted according to their obligations, then he or she would be more likely to trust the group in the future.

Degree Trust

Trust is a matter of degree and there is no such thing as blanket trust. In fact trust has been defined as the degree to which the truster holds a positive attitude towards the trustee's goodwill and reliability in a risky exchange situation (Geyskens, 1998). The degree to which trust is given varies with the individual, the organization and the situation at hand. Also the buyer's need for information or advice varies with product type. That is, if the purchase decision involves certain attributes such as high price, complexity, learning, rapid change or risk, then the information needs in order to build trust will be greater. Hence, there is need for the ability to customize the degree to which a truster places importance on different aspects of trust commensurate with their individual risk tolerances and the situation at hand.

Cultural Trust

As the globalisation of markets by the internet makes it necessary to establish trust in disparate foreign markets, jurisdictions and cultures, it is important to understand the impact of national culture on the trust building process. Cultural differences result in different responses to risk (Doncy et al, 2000). As each culture's collective programming results in different norms and values, the processes trusters use to decide whether and whom to trust is heavily dependent upon a society's culture. That is, the fundamental bases of trust vary across nationalities, with consumers coming from individualistic countries having a higher trusting stance in general and being more willing to base their trust in the merchant on factors that are inferred from an impersonal Web site than consumers from collectivist countries.

Third Party Rating Trust

Not only is trust affected via first hand transaction, but also by the opinions of other

parties. Trusted third parties are important sources of opinions. In the offline world such parties include organizations such as business bureau, consumer reports and the media in general who render expert opinions based on research. In the online setting, seals of approval from trusted third parties such as Visa, and business bureau online have been found to reassure consumers that they can trust a business site. In fact, third party ratings may be even more important online than offline due to the absence of visual and social cues found in traditional business world. The use of trusted third parties to mediate the exchange of information can enhance privacy and trust in electronic communities (Huberman et al, 1999).

Second Party Opinions Trust

Trust can also be affected by the opinions of second parties that have had experience in conducting similar transactions with a business. In the offline world, such parties might include friends and acquaintances that render personal opinions based on experience. In the online world, which is better able to facilitate communication among strangers, such parties may be just about anyone who has conducted transactions with the same business. Presenting user feedback reduces the customers' perception of risk and enhances trust.

First Party Rating Trust

First party rating is that which the businesses provide concerning themselves and is critical to developing trust online. The first party (business) needs to clearly present information about its services (e.g. delivery methods, insurance, payment methods), policies (e.g. privacy, security, returns) and products (e.g. description, pricing, availability). In the offline world, expectations around transactions are often established and reasonably constant within a local context while in the online world that covers a much wider geographical and cultural area, much more information concerning transaction must be explicitly stated by the business to establish customer relationships such as personal contact.

Formal Control Trust

Formal controls employ codified rules, goals, procedures and regulations that specify desired patterns of behaviour and penalties or sanctions to be applied in cases of nonconformance. They serve to influence the behavioural patterns of companies and individuals by delineating clear boundaries. In the online world, formal controls include the use of reputation systems and label bureaus as mechanisms for building a Web trust.

Web Trust Mechanisms

In many respects, trust online is similar to trust offline. But new mechanisms are required to communicate the diverse information that trust is built on. In the offline world, much of the information pertinent to trust is carried in visual and cultural cues. Therefore, one of the principal challenges in developing online trust mechanisms is finding ways to communicate this same information in a digital medium. This paper examined two trust mechanisms, namely; reputation systems and label bureaus with respect to the trust principles identified above:

Reputation Systems

Reputation systems are feedback systems in the online context and are repositories for second party ratings. (Gambetta, 1998). Fundamentally, they are a type of trust framework that supports social controls. That is, a reputation system collects, distributes, and aggregates feedback about participants' past behaviour.

However, the strengths of online reputation include, community building positive reinforcement mixed format and dynamic systems (Blois, 1999). These reputation systems are a critical component of a trust framework as they support many of the trust principles in a way that label bureaus do not. In particular, they provide a vehicle for second party opinions, and help to establish social controls.

Label Bureaus

Label bureaus are an approach to communication and processing of both first and third party trust informations. A common format for labels may be articulated so that any compliant selection software can process any compliant label. The labels can accommodate any set of labeling dimensions used to describe Web content, as well as any criteria for assigning labels (Picher, 2000).

Web users, by choosing their selection software and label bureau can control sites they access through their selection criteria. However, the strengths of online label bureaus include: multiple dimensions and perspective, transparency and filtering for the support and capture of trust information across many different dimensions for web users (Nielson, 1999).

While both label bureaus and reputation systems have strengths, neither of them can address in isolation the full range of trust principles earlier discussed. For example, reputation systems do not address first party information, third party ratings and formal controls trust principles while label bureaus do not address second party opinions and cultural trust principles as evidenced below.

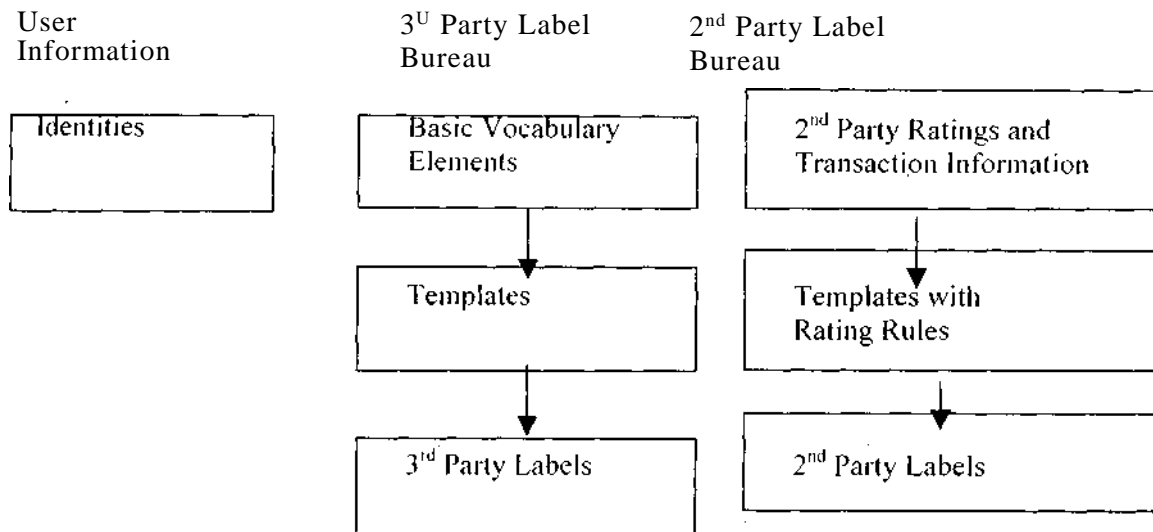
Table 1: Capture of Trust Principles in Hybrid Trust Model

S/N	Trust Principles	2 nd Party Labels Based on Reputation Systems	3 ^d Party Labels Incorporating 1 st Party Information
1	Identity	*	*
2	Information	*	*
3	Risk	*	*
4	Reciprocity	*	*
5	Degree	*	*
6	Culture	*	
7	Third Party Rating		*
8	Second Party Opinion	*	*
9	First Party Rating		*
10	Formal Control	*	*

Hybrid Trust Model

The proposed hybrid system is a label bureau, centred on the behaviour of companies and individuals in the context of e-business transactions. It consists of two types of labels, namely: the standard third party labels and the new type of second party label, which is a summarization of ratings captured in an associated reputation system. The third party labels are used to capture ratings of e- business sites along multiple dimensions and allows users to customize the degree of importance of each dimension according to their own value system.

Figure 1: Hybrid Trust Model



Source: (Modified Model of Trust for E-commerce. Egger, 2000)

The third party labels are based on model layers to distribute the work of rating and filtering between first parties and third parties. The first layer consists of a basic vocabulary of terms that would be used by first parties to present information about their services (e.g delivery methods, insurance, payment methods), policies (e.g privacy, security, returns), and products (e.g description, pricing, availability). The second layer consists of rating templates created by third parties and permits rating along multiple dimensions and using different scalar orders. Thus, these third party labels incorporate first party information.

The second party labels are computed aggregations across ratings in an associated reputation system. Each of these labels corresponds to a set of second party ratings that are individually available to the users. As with the third party label system, users can customize how labels are created according to their own value system. The main difference here is that the templates and rating rules that perform these computations must specify how multiple instances of second party feedback are to be combined into a single label.

Though this model is both obvious and easy to imagine, there are however critical issues that must be addressed to make it work well. They include how to establish the identities of the parties involved in the transaction and how to represent information about the many different individual communities. That is, such a hybrid system must be able to manage the trust dimensions of both identity and transaction related issues.

Identity Dimensions

What is important in encouraging trust in e-business is not the specific product or service features, but the behaviour of the parties involved and whether they deliver on their promises (Blois. 1999). Consequently the focus should be on maintaining feedback on an individual and a company's behaviour during the course of the transaction and rate the dimensions that indicate that the parties have delivered on their promises to one another.

User information or identity is defined as the condition of being a specified person or thing that is particular and clearly distinguished from others (Gambetta, 1998). This is a critical element in the establishment of trust and part of our hybrid model. Depending upon the application, the characteristics that clearly distinguish one person from another will be different. For some

applications the distinguishing characteristic may be a name, address, and telephone number, while for others a user name and password or even a digital certificate may be used.

The purpose of developing a system to establish identity for e-business is two-fold. It

must tie the transactions together in order to establish history for a specific virtual identity. Secondly, it may be used to tie the virtual identity to a physical identity (Egger, 2000). In this model, the only property we are going to attribute to virtual identity is transaction history.

There are good commercial reasons for business not to change identities because so much is invested in the development of brand equity and reputation that are tied directly to their unique identity. (Geyskens, 1998).

In order to establish the trust necessary to conduct business on the internet, it is necessary to find new methods to accurately establish the identity of individuals participating in e-business transactions. There are a number of identity authentication systems used in electronic business including password authentication and digital certificates. We would recommend using these two in combination with third party database verification of consumers' personal information for a hybrid trust model in Figure 1 above.

Transaction Dimensions

The trust principles outlined above stress the need for tailored information in the online context. It is this diversity of information that is, in part, to replace the visual and social cues present in traditional business (Friedman, 2000). Our trust principles suggest that different types of transactions will need to be rated on very different dimensions. For example, Risk Perception Trust Principle states that trust is a function of risk, so we must represent the different elements of risk that are associated with a given transaction type. That is, the risks associated with auction-based transactions are after all very different to those associated with retail transactions. Information Trust and Degree Trust both argue that different types of information (i.e dimensions) must be captured in different types of transactions in order to support trust. Therefore this hybrid trust model will be based on a multiple criteria ratings systems. The exact rules for performing the combination should be user specified via a simple user interface as shown in Figure 1.

Web Trust Significance

We have built a model that allows us to examine the behaviour of businesses and individuals in the context of e-business transactions, compared it to the performance of the trust principles presented in this research.

Our conjecture however is that reputation systems and label bureaus management will likely become more important in the future as the Internet develops as a market place in developing countries such as Nigeria. They are clearly a contributing factor to success in e-business as evidenced in the identity and transaction dimensions of the proposed model. Their existence and performance can make a big difference in buyers' satisfaction or firms' profit and thus in their reliance on online markets.

Conclusion

Trust is one of the mainstays of business whether traditionally or electronically transacted, which has been embodied in its market structures and processes over the years. In this paper, the nature of trust in the online context have been explored and trust principles and mechanisms that support the promotion of online trust have been identified. Two forms of trust infrastructure, namely: label bureaus and reputation systems were examined. Label bureaus can be used to capture authoritative third party ratings and first party information while reputation systems capture second party feedback and opinions.

Finally, a new form of trust infrastructure called a hybrid trust model which is capable of integrating first party information, second party opinions and third party ratings in a single unified system has been proposed. As shown in Figure I, it consists of a repository for user information, and second and third party labels. Second party opinions and ratings are captured in a separate reputation or feedback system and are integrated into the hybrid bureau by the generation of labels which summarise ratings across many second party raters. First party information, based on a standardised vocabulary, is encapsulated within the third party labels. Ratings templates, created by third parties to

capture their different ideologies and values, are used to produce third party labels and ratings. In this way, first, second and third party information can be brought together into a single common framework, called trust model. As a whole, this model supports all the trust principles earlier identified as indicated by the asterisks in Table 1. However, reputation systems do not address first party information and third party ratings principles, while label

bureaus do not address second party opinions and cultural trust principles. The proposed hybrid model provides a mechanism to allow individuals and businesses to customise the system.

Trust is a complex and many faceted form of human behaviour. Hence, if we are to create online environments in which trading relationships are as easy to navigate, we will need to evolve rich and varied forms of online trust infrastructure and address numerous business, technical, social and legal issues for effective and sustainable electronic business in Nigeria.

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