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Justy Range
justyrange@gmail.com

Awie C. Leonard PhD
[University of Pretoria, Awie.Leonard@up.ac.za](mailto:Awie.Leonard@up.ac.za)

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Progressive Trust Formation within the South African Fresh Produce Industry through the use of Self-Service Technologies

Research Paper

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Justy J. Range

University of Pretoria
justyrange@gmail.com

Leonard C. Awie

University of Pretoria
Awie.Leonard@up.ac.za

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ABSTRACT

When using self-service solutions to deliver services, the challenge is to retain the trust of the end user. This is specifically the case when dealing with end users in the fresh produce market environment. This sector has not seen the adoption of self-service technologies, specifically in southern Africa. In this paper we propose a model to enhance our understanding of trust formation using self-service technologies. A qualitative research approach based on a case study was followed to create the model. This case study offers insight into how the dynamics of the product, supporting services, and the technology shapes trust forming behavior.

Keywords

Electronic exchange, fresh produce, progressive trust, self-service technology, trust.

INTRODUCTION

The growing digital interconnectedness of people and things¹ is reshaping our interaction and relationships with the world around us. Fuelled by an ever increasing capacity of networks to transmit data at lower costs, high availability infrastructure, increased mobility and ever more powerful devices, technology has infiltrated every element of our society. We are constantly searching, transacting, using services, creating information, and interacting with products in new ways. We are gradually seeing the infiltration of self-service² type applications as a method for distributing services electronically.

¹ Referring to “the internet of things.” <http://www.theinternetofthings.eu/>

²Self- service is defined as “.....any facility that enables consumers to produce services for themselves without assistance from firm employees.” (Beatson, Lee and Coote, 2007) [1]

The “...rich set of signals that can be cognitively exploited to access reciprocal 'moral' attitudes...” (Parlanti, Giuli and Pettenati, 2006, p.64) that are present in face-to-face or physical interactions is increasingly being substituted by electronic signals through self-service applications. This removes the multitude of cognitive signals used by the "trustor" (the trusting party) to engender trust in the "trustee" (object, person or environment). This reduction in cognitive trust signals has the potential to affect the adoption of technology (Lanktona, 2014). Lanktona (2014) states:

“Most past IS trust research has examined trust in humans or human organizations such as the e-commerce vendor, virtual team member, or trade partner. However lately, despite differences between human-technology exchanges and interpersonal exchanges, more and more researchers acknowledge that many people also trust the technological artifact itself.” (Lanktona, 2014, p.2)

This interplay between the trust in the technology, trust in the product, and trust in the organization is becoming more complex as technology affects the way trust relationships are formed. Within a transactional context, users engage with self-service technology in phases. Initially only exploratory actions are performed to identify potential transactional opportunities. As this process intensifies, greater levels of commitment are required and consequently risk increases. Higher levels of trust require a richer spectrum of cognitive signals to allow for the building of trust. The question arises, how one is to approach the challenge of enhancing trust within this progressive interaction through electronic “signals”.

This paper proposes the concept of “progressive trust” within a self-service context. A conceptual framework is used to illustrate progressive trust formation. In addition, the framework also emphasizes the role a wider service context plays in supporting trust forming behavior. We approach this environment from a transactional point of view and place the focus on the transaction process itself. Establishing the nature of the service and identifying the dynamics of the transaction process assists us in understanding trust forming behavior for the planning and design of self-service solutions.

This paper forms part of a broader study that focused on the interplay between trust and self-service provision within fresh produce electronic exchanges. The proposed conceptual framework had its origins in an empirical case study into fresh produce online trading environments. Subsequent empirical testing of the conceptual framework could be highly informative.

Fresh produce agents offer services to both the buyer and the growers, each having a separate dynamic. There are distinct separable levels present in the transaction process, each consisting out of different levels of trust intensity.

First, a discussion of the methodology and key definitions is provided. This is followed by a background to the case and the issue of trust. Thereafter an outline of the components of the proposed framework within a service context is given.

BACKGROUND TO THE CASE STUDY

Fresh produce markets in South Africa are a unique marketing channel with high levels of trust as its foundation. The formalization of this channel has its origin in the late 1800's. Although the system was

potentially in place from the 1700's, the earliest registered market agent was W.L. Osche & Co (Johannesburg) registered in 1888 (IMASA, 2012).

Since then the system, rules, and processes have been institutionalized within the fresh produce industry. There are no contractual agreements between the grower and the agents responsible for selling the produce. Products are procured through personal trust relationships established over many years. Produce is consigned to the relevant agent with the buyer taking ownership only after a sale has been made. The grower pays a sales commission to both the agent and to the market authority (who, in most cases, is the local city council). The industry (specifically the agent) is highly regulated with the city council acting as an independent third party regulator. Each one of the stakeholders - grower, agent, and city council - plays a part in the creation of a trustworthy environment. Schultz (2006) refers to this environment simply as the "trust environment".

The markets are characterized by low switching costs (growers can consign their products to another agent even after delivery has taken place) and high levels of competition. Thousands of buyers compete continuously for the same pool of available produce. Prices are negotiated for every transaction and no fixed price exists. All transactions are recorded on a central computer system controlled and owned by the relevant market authority.

During and after sales, the average aggregate price for every line of produce sold is released to participants and is freely available to decision makers. Daily market prices form the benchmark for decision making across the whole of South Africa's fresh produce industry. With this price discovery function, fresh produce markets play a critical role in fresh produce marketing. During 2012 roughly R11 Billion (Tshwane, 2013) was transacted in this manner, making this an interesting industry. All activity is governed by an inviolable layer of institutionalized and personal trust relationships amongst its participants.

Facilitating the trade within electronic exchanges should be a simple manner, given the high levels of trust already in existence. It would be expected that these high trust levels could easily be "ported" to an electronic channel. This has not been the case. Attempts to create self-service technologies have failed to bridge the gap between the physical and virtual spaces. Various attempts from role players were made but the use of technology to facilitate trade online only saw one attempt with mixed results.

The question that arose from the case environment was why certain electronic elements were trusted and utilized as part of the transaction (administrative and information related), but the more trust intense core services, where transactional commitment is required, were not utilized electronically as part of a self-service function?

LITERATURE REVIEW

Trust has received a significant amount of academic focus over the past sixty years. From the 1960's trust as a subject has enjoyed the attention of multiple academic disciplines (Mayer, Davis and Schoorman, 1995). Initially, the study of trust was limited to social contexts, but later expanded into the organizational and technological domain. What is clear from the literature, is that trust research evolves with time. Trust is present in all our interactions, be it between individuals, firms, institutions or objects, or any combination of these.

The technological environment experiences continuous change, which in turn affects the relationships between transacting parties. Change and uncertainty produce risk and risk requires us to evaluate our trusting beliefs as put forward by McKnight, Cummings, and Chervany (1998). This requires us to constantly realign our thinking and perceptions of trust forming behavior. Trust is an important social construct (individual or collective) and is influenced by these changes, which might explain the topic's repeated resurfacing.

According to Mayer et al. (1995), trust is defined as "... the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party."(p.712). Rousseau, Sitkin, Burt, and Camerer (1998) refer to trust as "... a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another."(p.395). For the purposes of this discussion trust is defined accordingly:

A willingness to accept a level of vulnerability to the actions of another party, based on the positive expectations that the intended behavior of the other party is guided by the best interest of the party performing the trust action.

Online related trust research has seen a significant influx of work from various authors, countries, and industries. Carter, Shaupp, Hobbs, and Campbell (2011) investigated the role of security and trust in the adoption of online tax filing. Chau, Hu, Lee, and Au (2007) focused on online drop-out decisions of customers. Lee and Turban (2001) propose a trust model for internet shopping. McKnight, Cummings, and Chervany (1998) explore the maturity of trust over time. Nadler and Kros (2010) tested the levels of trust in online auctions. Zang (2005) investigated the role of trust-promoting seals in online decision making. Geffen, Benbasat, and Pavlou (2008) refer to the emerging set of trust agendas for research that lists trust issues like dimensionality, longitudinal nature, trust and risk, distrust, personality, and antecedents of trust. Research tends to focus on a set of antecedents and trust elements between a trustor and a trustee. One example is: why users would trust or distrust the online tax system, internet vendor, or auction.

The understanding of how progressive transactional trust relationships in electronic exchanges are established is, however, not being addressed. The proposed concept of progressive trust refers to the process of establishing trust during a transaction's life cycle (using self-service solutions). From the initial enquiry phases, commitment to a transaction and the post-transaction phases, trust gradually intensifies. For example, general enquiries about product availability pose the least risk to the trustor. On the other hand, committing to a financial transaction would require higher risk levels. Through this progressive engagement, the specific self-service solution needs to take these factors into account and find creative ways to establish a trustworthy environment. These creative ways refer specifically to the replication of cognitive signals via electronic means.

Key Definitions

For the purpose of this study the concepts of "market" and "agent" should be differentiated from common interpretations.

The market refers to a municipal fresh produce market in South Africa, functioning according to a commission based business model. Reference is made to markets in the literature as mostly spot or

wholesale markets (Knox and White, 1991; Vasileiou and Morris, 2006). Within the commission based model, the market itself is also a service provider to the grower (not just the agent). The market's services create the institutional structures supporting trust relationships across the whole market. As will be discussed later, this implies that the market authority (the independent party) plays a very specific role to support the trust environment.

A fresh produce agent is defined as "... an agent acting as such with regard to any agricultural product...on the basis that the risk of profit or loss at all times remains with the principal..." (Republic of South Africa, 2003, p.2).

In most cases the definition of agents on markets fall under the wholesale definition (Grinsdell, 1996; Tracey-White, 1991). This distinction is important, because the trust relationship under a commission based model is significantly different to that of a wholesale model (one where the agent takes ownership of produce from the grower). Commission markets in South Africa are producer driven, whereas direct sales channels are buyer driven (NAMC, 2000). According to the commission based model, the product stays the property of the grower and the agent has to act in the best interest of the grower at all times. This implies high levels of trust between the grower and the agent. A commission based agent is by law not allowed to act as a wholesale agent (take ownership of produce). Agents are allowed to charge an *ad valorem* commission for their services on the produce sold. By implication the buyer purchases the product from the grower, pays the grower's selling price and the grower in turn pays the agent. There are multiple agents on the market, all performing the same set of services and competing for both the grower and the buyer. Within the service environment the buyer and grower are consumers of the agent's service. There are two very distinct service relationships present within this service system.

The Service Eco-System : Fresh Produce Markets

The service eco-system in this paper refers to the service environment in which the broader fresh produce market services are provided. Although there are multiple services that could potentially be provided via self-service type solutions, focus falls on the sales services offered by agents to growers and buyers. These two services differ significantly in focus and characteristics and are described separately.

A careful analysis of the service eco-system is important to identify direct, indirect, explicit, and implicit components of the service environment. In order to contextualize the service environment of the agent, three concepts are employed; firstly Lovelock and Wirtz's (2007) flower of services, secondly IBM's (2003) "smarter commerce," and thirdly elements of service science. The agent's roles and key services to each one of the participants are outlined, after which the underlying service science elements are discussed.

Fresh Produce Agents' Service

It is important to note that a fresh produce agent offers two distinctly different services: a sales service to the grower (as a representative of the grower in the transaction) and a sales service to the buyer as part of selling the physical product.

The agent sells two categories of services:

- Selling a service to the grower: selling and handling the product on the grower's behalf.
- Selling a sales service: selling the actual physical product on behalf of the grower to the buyer.

The “smarter commerce” concept of IBM (2013) is used to provide a conceptual view of the commercial process (See Figure 1) on markets. Viewing the fresh produce supply chain as a “farm-to-fork” process ignores the various intermediate service elements. The “smarter commerce” process is broken down into the procurement of goods (growing the produce in the case of growers), marketing, selling, and service stages. The grower focuses on the production of the product and the marketing of produce across various channels. As part of the marketing process, the grower develops a trust relationship with the agent. Within this service environment there are distinct and clearly separable services being offered to different role players (See Figure 1). Within the process the sales, service, and after sales service form the domain of the agent. The agent functions exclusively as a service intermediary on behalf of the grower. The agent’s sales function forms the touch point within this dual service provision. At this point, price is discovered and agreed upon and the financial transaction is concluded. It is also the stage where risk intensifies.

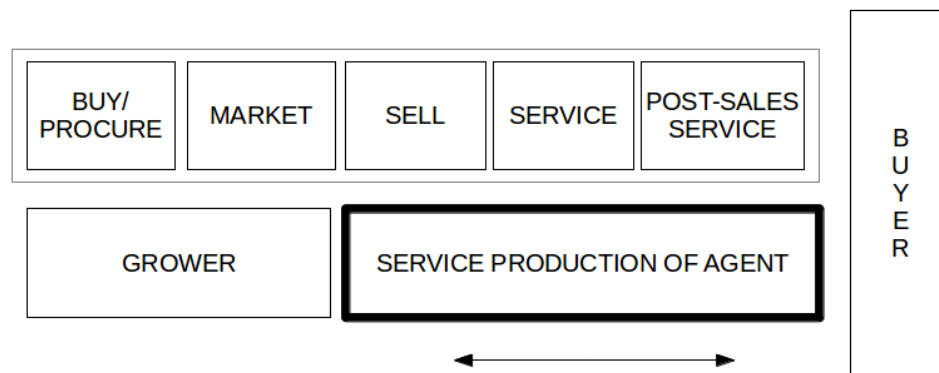


Figure 1. The commercial process mapped based on

IBM's Smarter Commerce concept (Produce, Market, Sell, Service)

A further distinction is made between the core service and the supplementary services following Lovelock and Wirtz's (2007) “flower of services” model (See Table 2). The flower of services centralizes the core service, which in the case of the agent is the price discovery function. Supplementary services include operational and logistic support, information distribution, administrative, and payment functions. Facilitating the service in a self-service environment requires each one of these core and supplementary services to be electronically mapped to underlying trust supporting activities.

As can be seen from Table 2, most of the services can potentially be facilitated by self-service solutions in a virtual exchange. With the exception of the price discovery function, most of the processes can be facilitated via electronic means and do not require human intervention. A failure to clearly identify and

define the various services and the different dynamic relationships could be a reason for the slow adoption of self-service systems. In the physical market context these micro elements are institutionalized to the point where it becomes ubiquitous. Within the self-service context, however, the challenge is to facilitate each service element explicitly.

	Service to the grower	Service to the buyer
Core service	Price discovery: determination of the correct price to sell the produce.	Price information procurement: obtaining the required product.
Supplementary services	Maintaining the relationship with the grower through communication	Price and availability information
	Provision of delivery and storage facility	Financial assistance
	Communication of relevant sales information	24 hour buying service
	Administrative functions	Delivery and logistical service

Table 2: Core and supplementary services of the agent

The differentiation between the two services (to the grower and to the buyer) provides two distinctly different approaches to viewing the agent's service. A different approach towards facilitating trust signals, for both the buyer and the grower, is required.

Service science components

Service science focuses our attention on the environment within which services are delivered. Through service science we are able to view service provision as more than just a functional construct, but also as a contextual one. Service provision does not occur in isolation. Within any service environment the indirect influences of people, processes, and technology are ever present. The definition of service science highlights this integrated nature of services:

Service science is defined as "... the application of scientific, management, and engineering disciplines to tasks that one person, organization, or system beneficially performs for and with another person, organization, or system." (Maglio, Srinivasan, Kreulen, and Spohrer, 2006, p.71).

Based on the service sciences framework (Chesbrough and Spohrer, 2006), the people, processes, and technology layers each exert an influence on the service and trust environment. The service science discipline provides a structure that allows one to separate these different supporting layers. Once separated, the interaction between them and the self-service solution can be mapped, and the impact on

trust forming behavior can be investigated.

The service environment of the fresh produce agent is characterized by well-established institutionalized roles and processes. Well established processes and role definitions reduce opportunistic behavior of participants. This provides a high level of situational normality and structural assurances, (McKnight et al., 1998) reducing the perceived risk of participation. Buyers, growers and agents are not only aware of their own roles, but they are familiar with each other's role and the process. People's actions and reactions are more predictable and although the competitive element is not removed, the rules of engagement are implicitly part of all transactions.

The transaction process is deliberately made transparent on the markets. This is done through the integrated use of the computing infrastructure. Participants are registered on the market's computer system and no anonymous users are allowed. The identity of the other transacting party is at all stages known to all participants. A familiar and transparent process reduces the opportunity for manipulation and opportunistic behavior, increasing the levels of structural assurance (McKnight et al., 1998).

Without a strong presence of a third party independent regulator the perceived risk could increase. An independent third party creates a sense of objectivity and confidentiality. Two challenges facing exchanges according to Bijman (2006) are coordination of activities and safeguarding of transactions. Technology plays a key role in coordinating activities on markets. All transactions need to be channelled through the system. The market's system is tightly controlled and high levels of security prevent transactions from unauthorized access. Through the technology platform the authority is able to enforce business rules, governance, and assurance functions. As Das and Teng (1998) illustrate, trust in the actual monitoring system supports trust forming behavior. The importance of an assurance framework within service settings is also highlighted by Spohrer (2008) and Lee and Turban (2001). According to Bijman (2006), governance structures can be classified as a set of public and private rules that governs transactions. A strong regulatory environment provides pro-active assurance that any opportunistic behavior will be addressed with potential recourse provided.

According to Das and Teng (1998), electronic enabled exchanges are particularly risky because:

1. Buyer and seller are not known to each other.
2. Platforms are less known (in the case of general e-commerce).
3. Product access is limited.
4. One cannot monitor the use of personal information.
5. One cannot predict the behaviors of the other party.

When viewed against the backdrop of the discussion above, it can be seen that some of these elements are naturally addressed by the business model and structure of the markets. Buyers and agents are known to each other and personal information is deemed safe in the hands of the third party provider (city council). Product access, however, stands out as a particular challenge, especially due to the perishable nature of the product. Risk of product quality related issues affects the reliance on self-service solutions as the technology cannot quantify all relevant quality related variables. Product related risks are noted as a major hurdle to self-service implementations on markets. Das and Teng (1998) highlight

the fact that trust in e-commerce is driven partly by trust in the seller, the seller's product, and partly by the electronic channel itself. Trust within electronic exchanges needs to be viewed as more than just a trustor/trustee relationship, but also as an extended interaction with the service environment and the physical product itself.

METHODOLOGY

A qualitative research method was used using a single case study combined with a review of the literature. According to Walsham (1995), single case studies allow the researcher to do an in-depth investigation of phenomena so as to provide a rich description and understanding. Furthermore, there have been a number of seminal single case studies within information systems over the years, such as the work by Markus and Pfeffer (1983) and Myers (1994).

The case study included the physical trading environment of the Johannesburg Fresh Produce Market. In addition, the broader trading environment of fresh produce markets provide the context of the industry as a whole. The various national fresh produce markets have the same business model; participants function under the same legislative and operational frameworks. The Johannesburg Fresh Produce Market has its origins in 1887, when it was located in the Market Square in central Johannesburg (JFPM, 2013). In 1913, as the city expanded, the market facility itself then occupied bigger premises in Newtown and moved to its current location in City Deep in 1974. The following quotes from the Annual Financial Report (JFPM, 2013) provide background to the case environment:

“The entity is a municipal entity and is 100% owned by the City of Johannesburg. It is a commission-based business where producers deliver their produce to market agents whom in turn then sell the produce to buyers. Its primary income is earned through a 5% ad valorem rate levied on fresh produce traded at the market.” (p.10)

“The entity is used as a price barometer for fresh produce in South Africa as it commands nearly 40% of the national market share in both volume and turnover and trades twice the volume of fresh produce of the second biggest market, namely the Tshwane Market.”(p.11)

“The Market Agents and tenants at the Market employ more than 6,000 employees in total. There are approximately 5,000 active farmers on the Market’s database and approximately 11,000 buyers visit the Market on a daily basis. Our Customers who buy fresh produce at the Market come from all over South Africa as well as SADC member countries; Botswana, Zambia, Namibia and Mozambique.”(p.11)

The gross operational turnover (Per Calendar Year) of the Johannesburg Fresh produce Market is shown in Table 1.

CALENDAR YEAR	VALUE(RANDS)	MASS(TONS)	RAND/TON
2000	1,205,628,243	796,660	1,513
2001	1,258,713,025	829,775	1,517
2002	1,640,033,669	820,351	1,999
2003	1,823,016,126	849,324	2,146
2004	1,629,202,207	820,625	1,985
2005	1,992,569,919	934,181	2,133
2006	2,199,987,660	948,822	2,319
2007	2,702,600,877	920,956	2,935
2008	2,899,399,918	986,370	2,939
2009	3,559,963,341	969,730	3,671
2010	3,871,266,599	1,159,421	3,339
2011	4,014,567,158	1,115,577	3,599
2012	4,457,860,681	1,194,594	3,732
2013	5,211,756,920	1,211,957	4,300

Table 1. Johannesburg Fresh Produce Market turnover per calendar year.

Source: Tshwane (2013).

It is important to note that this is not revenue of the market, but the monies generated from gross grower sales. The revenue of the market (and agent) is commission based with additional sundry cost recoveries (like storage costs, administrative costs, transport, etc.) making up the main income stream of the market facility.

The following points elaborate on the various broader industry dynamics that would support the use of a single case study in this instance.

The fresh produce markets in South Africa form an ideal backdrop for research into trust. There are 22 such markets in operation within Southern Africa. The (physical) fresh produce market environment is characterized by well-established institutional trust relationships. Various attempts to introduce virtual trading environments have not been successful in South Africa with only one full scale attempt launched in 2010 with mixed reception from industry (Sherry, 2013). Using this interplay between the physical and the virtual, the case study offers valuable insight into the contrasting trust dynamics between these two environments in order to contribute to potential issues that might affect the deployment of such trading systems in South Africa.

Markets in South Africa are unique in that they operate on a very distinct commission only model supported by a legislative framework that guarantees growers their monies if produce were not sold according to the guidelines (IMASA, 2013). All efforts are directed at serving the grower and protecting the integrity of the sales system.

The same business and operational model is used across all of the fresh produce markets in South Africa. These markets are also an integral part of price discovery for the industry (NAMC, 2006).

Growers pay both a commission to the agent as well as the market authority. In effect the grower is the client for both the market authority and the agent, although for different services. The agent offers sales

services and the market offers infrastructure related services as well as performing an oversight (referee) function.

The physical (and virtual market) all operate in exactly the same manner using the same business rules and regulations. This allows for the application of these results across all markets within South Africa. The selection of a single case study in effect represents a view on trust relationships across the whole industry.

The fresh produce markets are commission based markets (not wholesale) where produce is received on consignment (ownership stays with the grower until sold) (Tracey-White, 1991). In South Africa there are no formal contracts between the agent and growers (this also seems to be the case in spot markets internationally) (Grimsdell, 1996). This requires a high level of trust between the agent and their growers.

Fresh produce markets are used by thousands of growers and buyers who operate in a similar fashion. In a single case study the trust environment shaped by all these individual actions provides an in-depth view of the trust forming dynamics on these markets.

Lastly, a distinct triangular dynamic exists between the buyer, agent, and grower. A strong regulatory environment supports trust forming behavior. This allows for the study of interactions from different angles within the same environment. The physical market plays an informative role in understanding the broader service context. Because the institutionalized processes and roles within the physical market environment are the same as in the virtual exchange, it provides a set of reference points for comparison with the virtual market environment. The physical market environment provides an important example of how seemingly unrelated roles contribute indirectly to the creation of a trust environment.

RESULTS

Progressive Trust – Stages Of Engagement

As the buyer (or grower) engages with the market environment, various distinct phases can be identified (See Figure 2). Initially a search phase is entered where general information of the market is scrutinized to identify opportunities. Initial trusting beliefs and intentions (Mayer et al., 1995) informs the trustor's actions through the search and identification of potential service providers. Once an opportunity is identified, further engagement is made with the other party to negotiate the terms of the transaction. The next stage is performing the transaction itself. This involves some form of deliberate action from both sides to conclude the transaction. Each one of the stages consists out of different levels of trust intensity, each of which requires specific accommodation within a self-service context.

Progressive trust refers to the changing nature of trust within this transactional process. In the preceding example, trust intensity changes from low (search phase) to high (transactional phase). Progressive trust could assist us in understanding how these changing trust levels need to be accommodated within a self-service solution.

Canavari, Fritz, Hofstede, Matopoulos, and Vlachopoulou (2010) offer the following example of stages identified within the fresh produce context:

“A buyer at a Dutch food specialities wholesale company who is always on the lookout for new procurement opportunities follows the following steps:

- scout market/fairs
- sample taking and testing; if ok then
- check on the firm (e.g. certificates or audit); if ok then
- make specifications for the product; if ok then
- agree on price, quantities, dates; if ok then
- buy.” (p.323)

Within this example one can see the progressive nature of the engagement. As the consumer narrows in on the potential service providers, issues like assurance (“certificates”) are sought due to the higher dependence on trust signals.

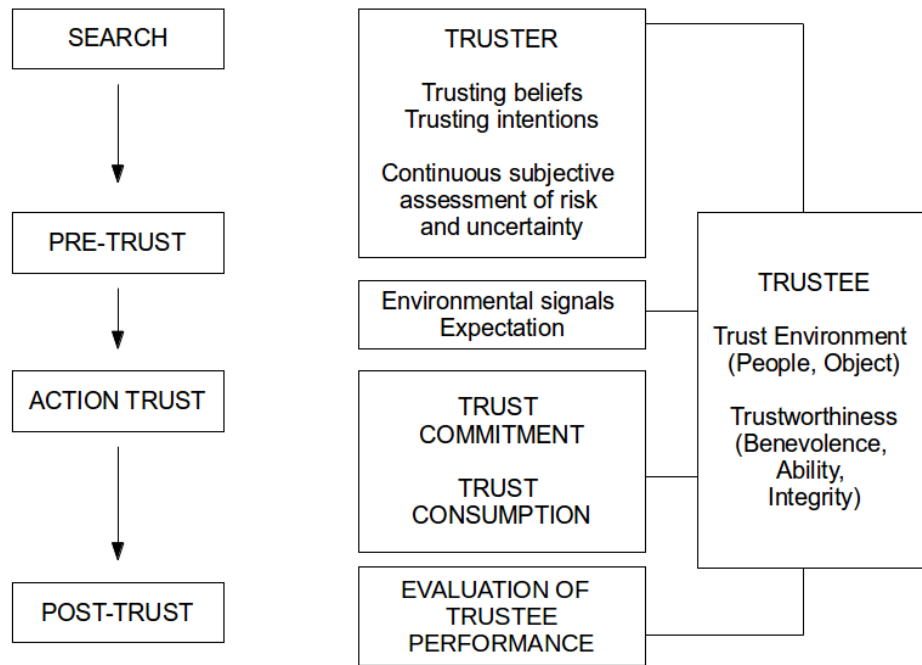


Figure 2. Basic trust elements. Based on trust elements highlighted by Mayer et al. (1995) and McKnight et. al. (1998)

To support the notion of various distinct transactional phases, two models were identified (See Table 3). The model of Mills and Morris (1986) offers a view of service interaction from a marketing perspective. Schultz (2006) provides a view of the various stages within a trust transaction referring to the preceding phase, the trust situation, and subsequent phase. Mills and Morris (1986) highlight the interaction with a “service” through pre-encounter, initial encounter and decoupling phases.

During the pre-encounter phase, various expectations and value judgements are formed by the trustor. Mills and Morris (1986) list aspects like role expectations (observation, participation, imitation), predispositions, and role enactment as initial activities that inform these expectations. Schultz (2006) refers to a “preceding phase” in which the trustor determines the trustworthiness of the trustee. Mills and Morris (1986) make reference to the search activity and highlight the high-level interplay between the trustor and trustee in creating initial perceptions.

“... even before a prospective client actively searches for a service, he or she may have some picture of the service the organization has to offer and the role he or she is to perform in the production of service inputs.” (Mills and Morris, 1986, p.729)

According to Mills and Morris (1986) the initial encounter is characterized by negotiation and role related activities (role acquisition, role determination, and role making). Schultz (2006) refers to this as the “trust situation”; the situation in which the trustor forms a perspective of how trustworthy the trustee is. Mills and Morris (1986) refer to the decoupling stage where both parties view the service as complete, whereas Schultz (2006) refers to a “subsequent phase” in which actual behavior is observed and compared to the expected behavior.

Mills and Morris (1986)	Schultz(2006)
Pre-encounter	Preceding phase
Initial Encounter trust situation	Trust situation
Decoupling	Subsequent phase

Table 3: Transactional stages from Mills and Morris (1986) and Schultz (2006)

As users engage with the service, distinctly different stages of engagement can be identified, each posing a different perceived level of risk. For example, using the general search facility in the self-service solution carries a different level of potential risk than filling in personal credit card details and committing to a transaction. Table 4 presents the proposed phases that are used within the conceptual framework.

Search phase

The initial stage for grower and buyer consists out of general searching activities (See Figure 3). During this phase the consumer of the service (could be applied to both the grower and buyer) seeks a partner to provide a specific service. Various contacts are made and potential service providers are identified. From the grower's perspective the driving force is the marketing of its available produce. From the buyer's

perspective demand pressure drives the need to engage with the market. Both parties approach the market as trustors in search of a potential service provider (the agent / trustee).

PROPOSED PHASES	Mills and Morris (1986)	Schultz (2006)
SEARCH PHASE	Pre-encounter	Preceding phase
PRE-TRUST	Initial Encounter	Preceding phase
ACTION TRUST	Initial Encounter	Trust situation
POST TRUST	Decoupling	Subsequent phase

Table 4: Proposed stages of trust compared to Mills and Morris (1986) and Schultz (2006)

Pre-trust

Prior to engagement, an evaluation is made of the trustee. The trustor, through his trusting beliefs and trusting intentions (McKnight et al., 1998), evaluates the multiple signals (risk and uncertainty) from the environment and creates a risk profile of the trustee. A positive confirmation of the initial expectation yields a pre-trust commitment. It is interesting to note that McKnight et al. (1998) highlight an initial trust paradox. One would expect trust to be low during initial interactions when parties are unfamiliar with each other. It was found that trust does not evolve from a low level and grow to an acceptable level as the relationship matures. Rather, a certain default level of trust is initially shown towards the trustee and only diminishes when trust failure occurs. Once the trustor is satisfied with the trustworthiness of the trustee a transaction is entered into.

Action-trust

After evaluation of the trustee, a commitment is shown by entering into a transaction. This action is viewed as a critical step in the trust relationship. It is important to note that commitment or non-commitment to the transaction should not be attributed to elements of trust behaviour alone. The nature of the transaction involves multiple factors of which commercial motives might rate as the strongest. However, commitment to a transaction involves a higher level of risk. Committing to the transaction should imply that the user (of the service) views trust to be at an “acceptable” level.

The relationship between the grower/buyer and agent shifts from being a potential one to a contractual one. Both parties to the transaction inherit obligations and performance expectations. The agent's role intensifies due to the contractual delivery of the service. The conduct of the service provider now becomes the focus of trust evaluation by the user.

Post-trust

Once the trustor has consumed the service, a post-trust stage is entered into. The service experience is evaluated against the pre-trust expectation. Positive affirmation leads to a strengthening of the

agent/grower and agent/buyer relationship and positively affects the next transaction. Negative affirmation on the other hand increases the perceived risk of an additional transaction.

Each one of these stages implies different levels of trust intensity between the various parties. Neither of these stages uses the same set of “signals” to form a trust judgement. The design of self-service systems needs to take these progressive trust variations into consideration. The specific stages and the signals required within them, have to be mapped/replicated within a self-service solution. For example, when trust intensity is high, communication levels need to be high (more frequent and in detail). Assurance of product movement and quality related aspects need to be provided pro-actively rather than waiting for the customer to request it.

To further illustrate this point, a short summary is presented of the various stages (Figure 3) as viewed from both the grower and buyer perspectives.

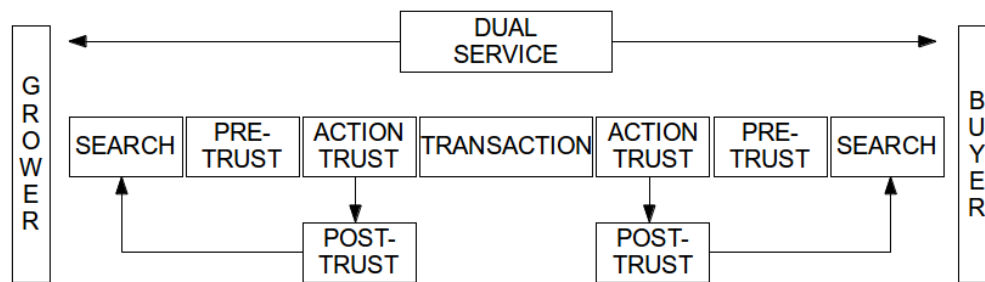


Figure 3 Fresh produce agent dual service: Two distinct services are provided; each with its own dynamics

From the grower's view point

- **SEARCH PHASE:** Within the search phase the required sales service is sought. The grower typically seeks to find the best price across the various marketing channels. General price fluctuations and expectations related to service and selling prices are evaluated.
- **PRE-TRUST PHASE:** Initial negotiations regarding the expected prices and information exchange is negotiated and commitment is reached. The grower typically verifies information. The maturity of this relationship will determine to what extent additional verification will be sought before committing again.
- **TRUST-ACTION PHASE:** The grower commits to deliver/supply produce to the agent. This is done, given broad price commitments made by the agent. Constant communication occurs between agent and grower.
- **POST-TRUST PHASE:** Information flow takes on an administrative nature. Evaluation of expected and actual prices takes place. Both performance and integrity of the service are evaluated.

From the buyer's view point

- **SEARCH PHASE:** Buyer searches the market to fulfil an order requirement (the purchase of produce). General broad pricing commitments are sought from agents.
- **PRE-TRUST PHASE:** Evaluation of prices and commitments relating to delivery and quality are made. Confirmation of delivery schedules and quality assurance is required to confirm the ability of the agent to deliver.
- **TRUST-ACTION PHASE:** Buyer purchases the product and ownership passes to the buyer. Constant communication between buyer and agent occurs.
- **POST-TRUST:** Buyer receives the product. Quality, price and other information supplied by the agent are compared with the expected values.

These phases are now discussed in terms of Mills and Morris (1986) and Schultz (2006). Each one of the framework's phases is compared to the practical elements found in the fresh produce commission business. The various phases proposed by Mills and Morris (1986) and Shultz (2006) will now be compared to practical examples from the case study.

Practical comparison: Mills and Morris (1986)

Mills and Morris (1986) propose a pre-encounter, initial encounter, and decoupling as transactional stages. Table 5 provides a practical comparison between the proposed stages and the service activities from both the grower and buyer perspectives. This is further discussed with the aim to provide potential trust related issues.

According to Mills and Morris (1986) the pre-encounter is characterized by various expectations and perceptions relating to the potential participation of the client in the production of the service. Mills and Morris (1986) emphasize the level of readiness of the client (client production skills) and the challenges facing the organization in preparing potential clients for participation:

“As production skills required of the client increase in complexity, service organizations will increase their emphasis on controlling variability in client role readiness at the pre-encounter stage.”(p.731)

As can be seen from the fresh produce industry, roles like the agent, buyer, and market are embedded institutional roles. Within Mills and Morris (1986) role definitions are introduced as part of the initial phase. The importance of this is listed as follows:

	<u>Mills and Morris (1986)</u>		
	<u>Specific comments</u>	BUYER	GROWER
SEARCH (Pre-encounter)	Expectations, predispositions Role enactment abilities Anticipatory socialization	Demand requirements of the buyer's customer General market information of current prices Verification of information from other sources	Production pressure Marketing decision needs to be made General market information of expected prices Verification of information from other sources
PRE-TRUST (Initial Encounter)	Initial encounter Negotiation Role acquisition	Confirmation agreed price	Confirmation of potential prices
ACTION TRUST (Initial Encounter)	Initial encounter Negotiation Role acquisition	Places order and pays for the product	Delivery is sent and received
POST TRUST (Decoupling)	Termination of service Evidence of service completion	Delivery of committed quantity and quality	Administrative completion Payments of monies owed All outstanding qty on delivery is sold and paid

Table 5: Practical comparison: Proposed stages of trust compared to Mills and Morris (1986)

“When the client arrives at the initial entry stage in a low state of role readiness, agency costs to the organization may increase and the service employee may face a greater burden in preparing the client to enter the negotiation phase where more or less definitive performance agreements are settled upon.”(p.731)

Initially role readiness is low and could lead to conflict and ambiguity which in turn leads to increased stress, agency costs, and potential opportunism (Mills and Morris, 1986). The reference to potential conflict, opportunism, and uncertainty would create an environment where trusting relationships are challenged. The provision of an environment which specifically addresses opportunistic behavior could assist in increasing trust in the service environment.

Both from a cost consideration as well as providing certainty, role clarity of the various parties contributes to the levels to which actions can be predicted within the system. Knowing what the expected behavior is and should be reduces the cost and increases trust of the user in the service environment. Within this context the seemingly informal socialization between the buyer/grower and the agent is done within the given context of what the “rules of the game” are and will be through the life cycle of the transaction.

“... role making is a process by which participants who are functionally interdependent: (1) work through how each other will behave in certain situations by reciprocal reinforcement and (2) agree on the nature of their relationship within the context of the formal organization.” (p.732)

The market system addresses this by clear descriptions of roles. Participation in the service also needs to be preceded by some form of induction process to reduce uncertainty.

For example, the market agent and sales person are clearly defined and are part of the public domain. Thus any participant has the opportunity to verify the integrity of the agent prior to engagement. Examples of the clear definitions are provided in the by-laws of the Johannesburg Fresh Produce Market (JFPM, 2007):

“‘Market Agent’ means any person - registered as a Commission Agent in terms of section 2 of the Agricultural Produce Agency Sales Act, 1975 (Act 12 of 1975), and who has entered into a contract with the Council to occupy an area on the Market sales floor for the receipt and sale of produce and includes a marketing organization as later herein defined;” (p.5)

“‘sales person’ means a person who - (a) acts on behalf of a Market Agent in any sale on the Market sales floor; and is (b) registered as such in terms of section 7 of the Agricultural Produce Agency Sales Act, 1975 (Act 12 of 1975); and is (c) duly authorized in terms of these By-laws to be employed as a sales person on the Market sales floor;”(p.6)

Within SST environment role definitions are set to play an even more important role as the opportunity to have physical contact is removed. With demarcation of the activities the rules and responsibilities need to be made explicit.

Subsequent encounters that lead to the formalization of the sales contract and the change of ownership of the produce systematically increase the intensity of the relationship structures. Mills and Morris (1986) specifically introduce the concept of “termination,” a deliberate attempt by the service provider to close the process. This is important for fresh produce agents as every unit sold needs to be accounted for.

Pro-active monitoring of the process through the use of the electronic system provides the agent the opportunity to settle these outstanding matters. The final reconciliation that is done terminates the relationship administratively (decoupling), but the client is still “attached” to the service through the need to use the service again.

The levels of transparency required within the commission system contribute to avoiding opportunism from the agent's perspective. An example of opportunism is the concept of moral hazard. This is where the producer of the service deliberately under supplies the service (Mills and Morris, 1986).

The structure of markets is such that transparency and oversight are offered as part of the service (provided by the market authority). Through this the grower is offered an environment that is trustworthy and that offers recourse in the event of service failure.

The description above needs to be made part of the SST solution in order to strengthen trust in the trading environment. As could be seen in all examples of physical trust forming behavior, the level at which this is offered should be higher for SST environments.

Practical comparison: Schultz (2006)

Schultz (2006) proposes a preceding phase, a trust situation and then a “subsequent phase”. Table 6 provides a practical comparison between the proposed stages of Schultz (2006) and the service interaction from both a grower and a buyer perspective (as presented in Table 5).

Schultz (2006) sketches an initial trust situation in which there is uncertainty about the expected outcome and intentions of both parties. The trust signals of transacting parties are generated by “actions”. Schultz (2006) observes:

“...it can however be observed that trust as information is neither transmitted nor directly observed. A trustee can only perceive the actions taken by the trustor to interact with the trustee as an indication for the trustor’s willingness to trust.” (p.4)

From the buyer's perspective, general price, quality, and quantity type information is sought. Firstly the agent must be willing to provide this information and secondly the buyer will test the information against what other agents would say. If the agent is known to be “trustworthy,” the buyer will proceed with a further request for a formal sales transaction. In the event where an agent seem to be opportunistic and provides untruthful information, the buyer could potentially retract from the transaction.

Schultz (2006) also points out that former experiences are central to trust forming:

“In a given trust situation, the trustor bases the trust decision on previous interactions that lead to the formation of the expectations related to the situation at hand. In case of no prior situation specific interaction and communication between the trustor and the trustee, the trustor relies upon former experiences or more generally on the disposition to trust.”(p.4)

This aspect is observed in the relationship between agents and growers specifically, where past performance and actions dictate future loyalties. Either party contributes to trusting behavior. Once the commitment to a transaction is made by both parties, the parties rely on each other to fulfil expected outcomes. In the case of the buyer, this might involve expected delivery of quality, quantity, and correct product. The time period between the placement of the order and the delivery of the product is filled by the actions of the agent towards fulfilling the expected results.

Within the subsequent phase, the buyer is confronted with the verification of the expected service delivery. The quality and quantity of the produce delivered are verified. If this is then fitting to the original expected results, the buyer forms a view on the extent to which the buyer can be trusted.

From the grower's point of view, the preceding phase is characterized by various interactions with the agent. Because the relationship between a grower and an agent is of a higher frequency (they are mostly in contact on a daily basis), the grower is confronted with more “signals” to determine initial trust perceptions. Produce is procured on an expected price, not a fixed price. This implies that agents need to constantly perform against these expected price commitments. The grower would take these aspects into consideration as part of the decision to ultimately send produce to the agent.

	<u>Shultz(2006)</u> <u>Comments</u>	BUYER	GROWER
SEARCH (Preceding phase)	“A trustor willing to interact with a trustee formulates a trusting intention to engage in a transaction with the trustee.”	Demand requirements of the buyer's customer. General market information of current prices. Verification of information from other sources.	Production pressure Marketing decision needs to be made. General market information of expected prices. Verification of information from other sources.
PRE-TRUST (Preceding phase)	“The formed intentions and expectations covering the trustee, the trust object, and the trust environment result into the actions, the trusting behavior taken by the trustor.”	Confirmation of price to be paid for the particular product and quality.	Confirmation of estimated price that would be received for the produce.
ACTION TRUST (Trust situation)	Trust transaction	Places order and pays for the product	Delivery is sent and received
POST TRUST (Subsequent phase)		Delivery of committed quantity and quality takes place. Verification of initial expected quality. Comparison of price paid against prices paid by other buyers. Service recovery.	Administrative completion. Payments of monies owed. All outstanding qty on delivery is sold and paid. Verification of price achieved against expectations. Comparison of price achieved against other grower's prices. Service recovery.

Table 6: Practical comparison: Proposed stages of trust compared to Schultz (2006)

The action of sending produce to the agent takes place within the trust situation. The physical handing over of produce into the care of the agent increases the required trust level between the agent and grower, as the risk now lies with the agent to perform. Communication about the status of the consignment becomes critical, as the grower needs confirmation of stock and price activity.

Once the produce is sold, the administrative processes of the agent bring closure to the transaction. The grower would review the performance of the agent against other information obtained from the market system. An interpretation would be made by the grower to determine whether the agent acted in a trustworthy manner and whether the expected and actual behavior can be favourably compared. This perception would inform the next interaction between the grower and agent.

The various stages of progressive trust formation were proposed in the preceding section. Each stage of service engagement requires a separate approach to ensure that the appropriate trust signals are present. In the next section these various components are combined into a conceptual framework.

DISCUSSION

In the preceding comparison, two aspects were introduced into the models of Mills and Morris (1986) and Shultz (2006). Within Mills and Morris (1986) the specific inclusion of the commitment phase is not present. Shultz (2006) refers to this as the trust transaction. In Shultz (2006) the search phase is not differentiated and is treated collectively as an “initial phase”. Our proposed conceptual framework thus elaborates on these two models and builds on the various components in order to provide a richer set of measurements to approach trust forming behavior within self-service environments. The search phase specifically is important in the self-service context. The forming of initial perceptions of the service provider (in this case the agent), is assisted by specifically providing more detailed information about the processes, the experience from other users and potential recourse in the event of service failure. This could enhance trust forming behavior prior to engaging with the service provider. Similarly, the action of committing to a transaction (action trust) serves as a point where responsibility for delivery on trust expectations becomes a reality for the service provider (the agent). Pressure is applied on the agent to ensure that the prices committed to the grower are matched and/or exceeded. Selling for lower prices would mean the grower loses trust in the agent to deliver on expectations and he/she could subsequently seek another agent. For the buyer, on the other hand, payment for the produce involves an expectation regarding quality.

After the purchase has been completed, the produce is delivered and the buyer needs to sell this in order to recover the costs. If an aspect like quality prevents the buyer from either fetching a profitable price, or produce needs to be destroyed, the buyer will either seek additional assurances in the future or will simply not buy from the agent again. In both instances there are various ways the agent will attempt to recover from a service failure. In both cases (buyer and grower) the failure of the agent to deliver expected service levels usually has direct consequences due to the high levels of competition between agents and the low switching costs associated with the channel. For the agent, these aspects place pressure on the agent to avoid any opportunistic behavior and act in a trustworthy manner.

Defining the service correctly is central to the development of the proposed conceptual framework. The

case study highlights the following aspects of the service on markets:

- The dual nature of the agent's service.
- The identification of core and supplementary services.
- Differentiated stages of engagement.
- Underlying influence of the service framework through people, process, technology, and assurance/legal issues.

A casual definition of the agent's service would describe the fresh produce selling process as a singular process between the grower and the buyer, ignoring the fact that there are two different consumers of the agent's service. Figure 4 highlights the fact that if one correctly defines each role player, the specific service and the different stages of engaging with the service provider, the elements can be contextualized in a framework such as Figure 4 depicts. The progressive trust dynamic is indicated in Figure 4 showing the movement from "LOW TRUST" to "HIGH TRUST" by both the grower and buyer. Underlying the trust dynamic is the supportive role that people, processes, and technology play in supporting trust forming behavior. The experience from the fresh produce markets is that the legal frameworks perform a fundamental role in ensuring that parties act in the best interest of the grower, who ultimately has to trust the market's "eco-system" in order to continue sending produce on consignment.

Using such a framework would enable one to identify the different trust dynamics at every stage of the service encounter. In turn we are placed in a position to seek creative ways to provide trust forming signals through the use of self-service solutions.

The progressive nature of the trust relationship (moving from low trust to high trust) is represented by the movement through the various stages towards delivery and consumption of service (the stages of engagement). The initial search stage requires general information, marketing related communication, past performance, and references from other role players. Aspects like legal recourse, other customers participating, and types of technology all contribute to create levels of perceived situational normality. Self-service solutions can easily accommodate search facilities of the service.

During the pre-trust stages, both buyer and grower would seek to intensify transactional activity. Assurance is sought by looking at past performance and also the experience of previous consumers of the service. Within this interaction, constant evaluation of the service is taking place. The challenge for self-service solutions would be to pro-actively create the environment where both grower and buyer can formulate credible trust expectations.

Both proceeding and committing to the transaction itself involve the highest level of risk (high trust). Using a self-service solution, deliberate transparency and tracking of all transactions are extremely important. This stage requires more direct assurance from the agent about the status of the transaction. On the grower's side, this includes constant daily communication of sale prices, values, and stock. In addition, growers also benchmark this performance against other consignments, similar products on the same and other markets, marketing expectations, and other growers' performance. The provision of functionality that allows the trustor to access supportive information should strengthen the trust relationship.

The subsequent evaluation of the performance of the agent from both the grower and the buyer side creates post-trust perceptions. Both grower and buyer have used the service and are in a position to evaluate pre-trust expectations. These transactional comparisons culminate in a perception of the agent's ability to perform and the level of integrity of its actions. If the grower/buyer is not satisfied with the performance, an alternative provider will be sought. This will involve returning to the search stage, where a market is sourced for a new potential provider.

People, process, technology, and legal/assurance can potentially support trust formation (indicated in Figure 4). In the case of markets, the existing market structures complement the service agents provide. Integration of these elements into the self-service solution strengthens situational and structural trust elements. Aspects like ownership and third party regulation of the self-service solution provide such indirect assurances. For a self-service solution to be effective, all aspects of the service environment need to be treated with equal priority.

The conceptual framework presented contextualizes the provision of services and provides a framework within which progressive trust formation can be studied.

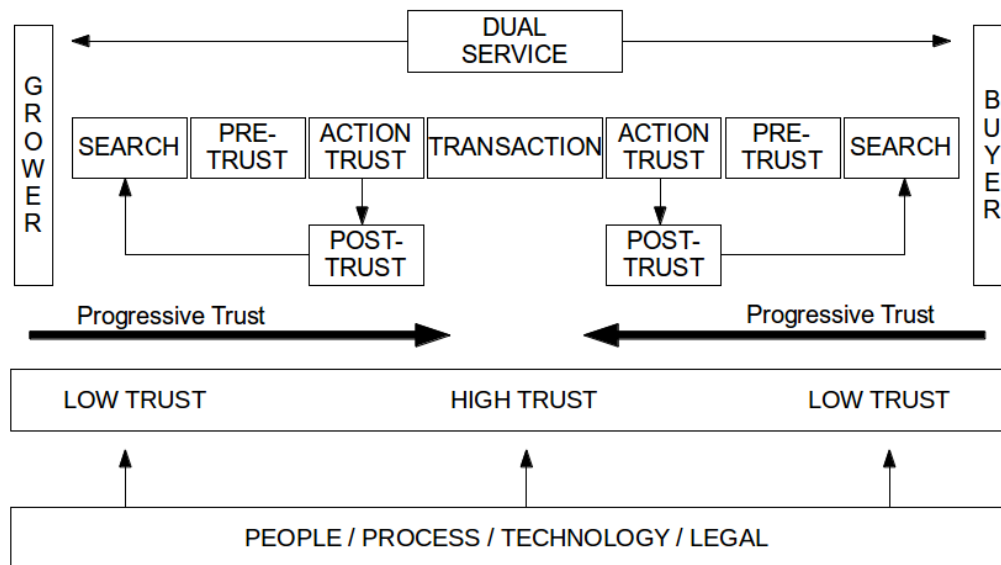


Figure 4. Conceptual framework for enhancing trust within self-service environments.

CONCLUSION

Various stages of trust formation within the agent's service offering were identified. A conceptual framework was proposed presenting the concept of progressive trust formation within the dual service of an agent. This study focuses the attention on the potential multiple service/trust dynamics that can be found in a self-service environment. As was shown in the fresh produce industry, the mere fact that a high trust environment is functioning in a physical environment does not mean that it can be ported to the electronic self-service domain. Special attention needs to be given to trust dynamics that are taken

for granted during our interactions within physical environments.

The conceptual framework highlights the following:

1. The service environment needs to be clearly defined and the different elements mapped accordingly.
2. The trustor and trustee need to be identified within this service context.
3. Both the core and supplementary services of the trustee require careful analysis to determine the service/trust dynamics of each service level.
4. The people, process, technology, and legal/assurance structures need to complement the service environment and trust building.
5. The trust environment, as perceived through a self-service solution, needs to be created deliberately in order to introduce trust forming signals.
6. Provision needs to be made for trust elements to be mapped for the various stages of trust formation. This requires a deliberate attempt to plan and design functionality that produces signals to enhance trust at that stage.
7. The nature of physical products poses a challenge to self-service provision, especially where these products are perishable or prone to natural defects, as is the case with fresh produce.

A self-service solution requires a fully integrated service and trust environment, i.e. the entire trust ecosystem needs to be functional in order to create a trusting self-service solution. No service component can be excluded. To ignore any aspect of the trust environment within self-service implementations will lead to non-adoption of the technology.

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