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An assessment of five different theoretical frameworks to study the uptake of innovations

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Summary

There are several theoretical frameworks one can draw upon to study the adoption process. Extension Theory, Bounded Rationality, Diffusion Theory, the Theory of Reasoned Action and Consumer Behaviour Theory were of particular interest to us. In assessing the frameworks we looked for contradictions, and how and whether these frameworks could be used to study the adoption process. The assessment was done by using our own conceptual framework of the adoption process and we discuss the results in this paper. We found that the different frameworks don't contradict each other and when combined into our conceptual framework they offer very useful constructs for studying the adoption process.

Key words: adoption, innovations, theory

Introduction

The adoption process – a conceptual framework

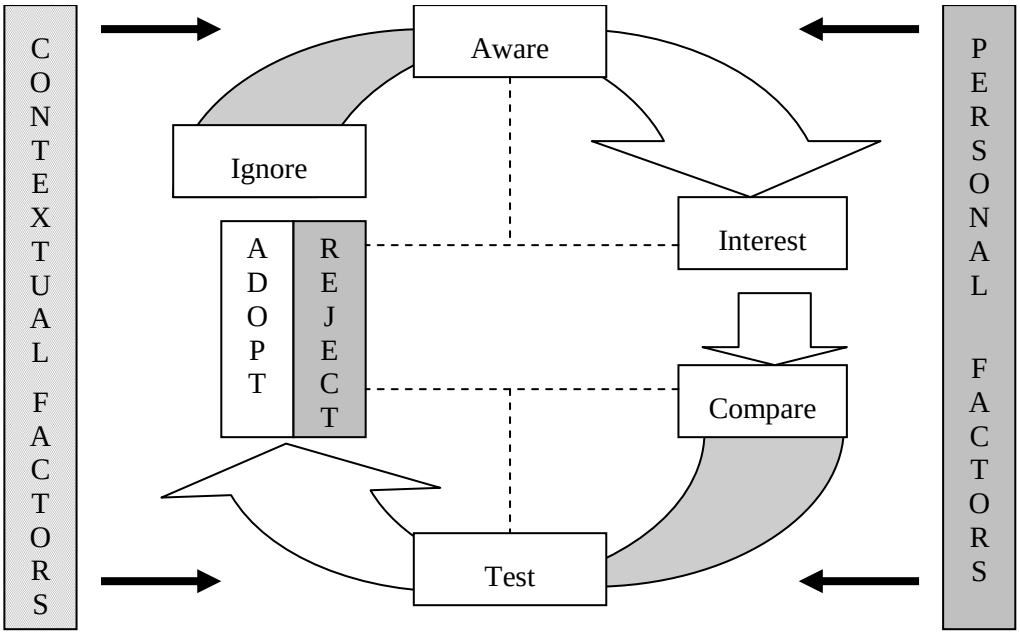
For our discussion we approach adoption from a psychological point of view. We view it as a process of decision-making by individuals that requires cognition, i.e. it requires the use of an individual's abilities to perceive, understand, and interact with their environment in an intelligent manner. In that sense the person and their environment play a role in the process. Nutley et al, (2002), Rogers (1995), Clarke (1996) and Wilson et al (undated) described different stages of the adoption or change process, which we illustrate in figure 1. We use the term "innovation" to refer to any concept, technology, practice or system that is new to any individual.

The adoption process begins when a person moves from a state of ignorance (called "pre-contemplation" by Prochaska et al 1992), i.e. being unaware or ignorant, to being aware. Rejection may follow immediately (see figure 1) or the adoption decision-making process may continue and the individual will develop and consequently demonstrate an interest in the innovation. Rejection may follow, or the individual may proceed into the next stage of the adoption decision-making process, comparison (see figure 1). During this stage the individual will compare the innovation with what's current. Rejection may result. If the comparison is favourable, the next phase is to test the innovation. During this stage the person will want to test the innovation on small scale, to see if it works for them.

During this stage the individual may also want, as part of the test phase, to compare the innovation with other available or possible options. They may reject it, because it "failed" the test. However, if the innovation "passes" this test, they will adopt the

innovation. Once adopted, discontinued application or use is also a possibility, e.g. rejection after adoption.

Figure 1: Stages of the adoption process



The adoption process takes place amid particular settings, e.g. policy, particular social and cultural contexts, climate, geography, and economic conditions and so on. These settings, called contextual factors, influence the adoption process too and need to be taken into account. Moreover, an individual's personal characteristics play a role in the adoption decision-making process. We also make provision for these factors in figure 1.

We firstly discuss the assumptions and concepts of each theoretical framework, followed by a discussion of its strengths and weaknesses. By strengths and weaknesses we mean the contributions to and shortcomings of the approach in terms of informing our adoption process framework as illustrated in figure 1 and discussed above.

Extension theory

Assumptions and concepts

Extension science evolved from rural sociology and over time extension has become more and more aligned with social psychology and communication (Röling, 1988). Traditionally, it was assumed that all farmers would eventually see the benefit of new innovations and thus adopt them. Therefore, views and measures of the success of an innovation were based on the level at which an innovation was adopted. A further assumption was that increased adoption rates would occur as information about the innovation was communicated through farmers' social networks. This organised and formal process of actively communicating such information was called

“extension”, basically the process of changing voluntary behaviour via communication. The goal of extension is to determine how to convey information regarding a new innovation to a certain population (such as farmers) so that they will adopt it. The challenge then of extension is to design an appropriate communication channel (Röling, 1988).

Over time within the field of agricultural extension the term extension has also been used to collectively include any advisory, consulting, technology transfer, research, training, marketing, industry development, learning, change, communication, education, attitude change, collection and dissemination of information, human resource development, facilitation, or self-development activities that are undertaken with the aim of bringing about positive change on farms and in agriculture (Fulton, et al, 2003). Traditional extension models were widely accepted yet failed to adequately explain the adoption behaviour of farmers.

Strengths and weaknesses of extension theory

Extension theory helps us better understand the contextual factors of the adoption process (figure 1) and provide insights into the communication aspects thereof – using communication to influence adoption decision-making.

Essentially the extension approach is not about studying or analysing the adoption of innovations. It is about bringing about behaviour change. In itself the approach does not provide a framework for studying the adoption of innovations apart from evaluating extension outcomes. The approach could have contributed more to studying the adoption of innovations, but evaluation of extension projects and programmes, i.e. assessing adoption levels and rates, is rather uncommon. It is uncommon because it is difficult. In this regard Qamar (2000) says: “There has always been concern for the difficulties faced in carrying out objective evaluation and impact assessment of agricultural extension programmes. Identifying the impact of extension within an agricultural development programme is a difficult task”.

It would be unfair to say or even imply that extension projects or programs are not evaluated at all, because there are good examples of this happening, e.g. Target 10, a state-wide dairy industry extension program delivered through the Department of Natural Resources and Environment in Victoria.

Bounded Rationality

Assumptions and concepts

In 1957 Herbert Simon challenged the classical economic theory that economic behaviour was essentially rational behaviour in which decisions were made on the basis of all available information with a view to securing the optimum result possible for each decision maker. Instead, he contended that in today's complex world individuals cannot possibly process or even obtain all the information they need to make fully rational decisions. Rather, they try to make decisions that are good enough and that represent reasonable or acceptable outcomes. Simon proposed a less ambitious view of human decision making which he called "bounded rationality" (BR) or "intended rational behaviour". It is, as he called it “that property of an agent

that behaves in a manner that is nearly optimal with respect to its goals as its resources will allow". He described the results it brought as "satisficing." As early as 1947, he rejected the notion of an omniscient "economic man" capable of making decisions that bring the greatest benefit possible. Instead he and proposed the idea of "administrative man" who "satisfices i.e. looks for a course of action that is satisfactory or `good enough.' "

Simon (1991) points out that most people are only partly rational, and are in fact emotional/irrational in the remaining part of their actions. He gives Albert Einstein as an example of bounded rationality.

Simon indicated that there were two major causes of bounded rationality:

- Limitations of the human mind
- The structure within which the mind operates

Strengths and weaknesses of Bounded Rationality

BR is about the whole decision-making process rather than its different stages as we propose in figure 1. It is useful to better understand the intent of an individual when making a decision which, according to BR, is to "satisfice" or reach acceptable outcomes. It also adds the understanding that imperfect information is acceptable for decision-making, and that an individual's goals and resources play a role in decision-making.

Simon's research interest lay in the psychology of problem solving although he published widely in a variety of disciplines. BR is a psychological concept. Initially it was defined negatively rather than positively, i.e. it tends to be seen as all those aspects of decision-making that substantive rationality is *not* (Foss, 2002). Simon later changed the term into "procedural rationality" because he felt that BR was largely characterized as a residual category, i.e. rationally is bounded when it falls short of all-encompassing knowledge. His theory of satisficing search is one such characterisation. BR contains virtually nothing about the merits of alternative search procedures and it lacks a theoretically developed basis (Foss, 2002).

Diffusion Theory

Assumptions and concepts

According to Yates (2001) the work of Ryan and Gross (1943) in rural sociology is cited as the beginning of diffusion research. They used interviews as their main method of data collection. This has been a trend in diffusion research since.

The diffusion theory literature overview of Nutley et al (2002) shows how evidence and ideas from a wide range of underpinning disciplines are drawn together. These disciplines include anthropology, education, geography and sociology. These underpinning disciplines provide a range of perspectives on the diffusion of innovations (Nutley et al, 2002). Although different, the perspectives and emphases of many of these research traditions are said to complement one another: *'the*

unexplained residue of one is often a major preoccupation of another' (Kelly and Kranzberg, 1978: 120, cited by Nutley et al, 2002).

According to Rogers (1995) diffusion theories have their origins in the explanation of the adoption of technological change by farmers. The first edition of Rogers' influential text on the diffusion of innovations was published in 1962. Since then the scope of diffusion theories and associated empirical research has broadened. While diffusion literature largely covers innovations in industrial and service settings, a good deal of attention has now also been paid to public service and public policy innovations, with considerable emphasis on the diffusion of innovations in the health care and educational fields (Nutley & Davies, 2000).

Rogers (1995) points out that diffusion is not a single, all-encompassing theory. It is several theoretical perspectives that relate to the overall concept of diffusion; it is a meta-theory (Yates, 2001). There are four factors that influence adoption of an innovation (Rogers, 1995), including:

- the innovation itself
- the communication channels used to spread information about the innovation
- time
- the nature of the society to whom it is introduced.

Rogers (1995) explains that there are four major theories that deal with the diffusion of innovations. These are the innovation-decision process theory, the individual innovativeness theory, the rate of adoption theory, and the theory of perceived attributes.

Innovation-decision process theory

The innovation-decision process theory is based on time and five distinct stages (Nutley et al, 2002). The first stage is knowledge. Potential adopters must first learn about the innovation. Second, they must be persuaded as to the merits of the innovation. Third, they must decide to adopt the innovation. Fourth, once they adopt the innovation, they must implement it. Fifth, they must confirm that their decision to adopt was the appropriate decision. Diffusion results once these stages are achieved (Rogers, 1995).

Individual innovativeness theory

Nutley et al (2002) say the individual innovativeness theory is based on who adopts the innovation and when. A bell-shaped curve is often used to illustrate the percentage of individuals that adopt an innovation.

Rogers (1995) also pointed out that as well as the determinants of apportion at the individual level, there are a variety of external or social conditions that may accelerate or slow the diffusion process such as:

- Whether the decision is made collectively, by individuals, or by a central authority.
- The communication channels used to acquire information about an innovation, whether mass media or interpersonal.
- The nature of the social system in which the potential adopters are embedded, its norms, and the degree of interconnectedness.

- The extent of change agents' (advertisers, development agencies, etc.) promotion efforts.

Of importance is communication, or rather the process where information is both created and shared in order to reach a mutual level of understanding between individuals. This provides the means by which information is transmitted between individuals and social systems creating the communication channel (Rogers & Scott, 1997).

Theory of rate of adoption

The theory of rate of adoption suggests that the adoption of innovations is best represented by an s-curve on a graph (Nutley et al, 2002). The theory holds that adoption of an innovation grows slowly and gradually in the beginning. It will then have a period of rapid growth that will taper off and become stable and eventually decline (Rogers, 1995). The Bass model suggests other representations (Robert-Ribes & Wing, 2004).

Another aspect of importance is time. Innovations are seen to be communicated across space and through time. Time has been identified as being significant in the diffusion of innovations in three main ways (Rogers & Scott, 1997).

- Firstly, the adoption of an innovation is viewed as a mental process that evolves over time starting and initial awareness and initial knowledge about an innovation which evolves into an attitude towards that innovation. This influences the decision of whether to adopt of reject the innovation.
- Secondly, the rate of adoption amongst individuals differs throughout the social system. This starts of slowly with only a minority of people adopting the innovation increasing over time eventually reaching the rate where enough individuals have adopted the innovation and the rate of adoption becomes self-sustaining.
- Thirdly, time is involved in the rate of adoption or rather the relative speed that members of a social system adopt innovations. This is often measured as the number of members of the system that adopt the innovation in a given time period.

Theory of perceived attributes

The theory of perceived attributes is based on the notion that individuals will adopt an innovation if they perceive that the innovation has the following attributes (Nutley et al 2002). First, the innovation must have some relative advantage over an existing innovation or the status quo. Second, it is important the innovation be compatible with existing values and practices. Third, the innovation cannot be too complex. Fourth, the innovation must have trialability. This means the innovation can be tested for a limited time without adoption. Fifth, the innovation must offer observable results (Rogers, 1995).

Strengths and weaknesses of Diffusion Theory

Being a meta-theory, Roger's approach makes several contributions to the adoption process as shown in figure 1. These are shown in Table 1.

Table 1 : Contributions of diffusion theory to the adoption process

Aspect of Roger's approach	**Contribution to the adoption process**
Factors that influence adoption	Brings three aspects to the contextual factors of the adoption decision-making model. Firstly the notion that the innovation itself is important. Secondly, communication channels that spread information about the innovation influence the adoption decision-making process. Thirdly, the nature of the society to whom it is introduced influences adoption decision-making.
Innovation decision-process theory	The 5 stages of the innovation decision-process theory correspond to the stages of the adoption decision-making model.
Individual innovativeness theory	Apart from re-emphasising communication channels and their influence, and the nature of the social system in which the potential adopters are embedded, it adds the extent of change agents' (advertisers, development agencies, etc.) promotion efforts as a contextual factor.
Theory of rate of adoption	Confirms that adoption is a mental process that evolves over time. It brings to the adoption decision-making model the concept of attitude towards the innovation. This attitude influences the decision of whether to adopt or reject the innovation.
Theory of perceived attributes	It brings to the adoption decision-making model the concept of perception – how the adopter views the innovation in terms of five characteristics: relative advantage, compatibility, complexity, trialability and observability.

The limitations of the diffusion approach are well documented and we discuss only some. Firstly the theory does not consider the possibility that people will reject an innovation even if they fully understand it (Waterman, 2004). Also, insufficient consideration is given to innovation characteristics and how these change over time (Wolfe, 1994). According to Kole (2000) it is technology driven because of its 'pro-innovation bias'. Pro-innovation bias implies that all members of a social system should adopt innovations and adoption should happen more quickly. Kole (2000) also indicates that 1) it does not take into account the fact that diffusion and adoption may fail because it was a bad idea to begin with; 2) that it associates the latest technologies with 'progress', thereby ignoring alternatives; and 3) that focuses on the individual adopter and thereby ignoring social structures. This is called the 'individual blame bias'. Nutley et al. (2002) point out that the nature of the utilisation of knowledge in diffusion of innovations is further complicated by contrasting straightforward adoption (replication) *versus* reinvention (adaptation). Early

diffusion studies assumed that adoption of an innovation meant the exact copying or imitation of how the innovation had been used previously in a different setting. However, following the work of Charters and Pellegrin (1972) the accepted wisdom now recognises the concept of reinvention – defined as the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation (Rogers, 1995; Hays, 1996).

Theory of Reasoned Action

Assumptions and concepts

Parminter and Wilson (2003) describe the model as follows: "The model addresses the internal (psychological) determinants of peoples' behaviour across a wide range of physical and social situations. The Theory of Reasoned Action (TRA) is based upon peoples' behaviour being strongly related to their attitudes towards that behaviour. People form attitudes by systematically deliberating on any information that they have about the behaviour being considered (Fazio, 1990, cited by Parminter and Wilson, 2003). In turn, attitudes result from an individual's beliefs about the consequences of a particular behaviour and their (his or her) evaluation of those beliefs. The more an individual expects that a particular behaviour has good consequences for themselves, the more that individual will have a positive attitude towards that behaviour. Similarly, the more that an individual expects a behaviour to have undesirable consequences for themselves, the more that they will have a negative attitude towards it. Peoples' attitudes influence their behaviour through the formation of intentions to behave in certain ways. A similar process exists with subjective norms".

Parminter and Wilson (2003) further say that: "Included in the basic Theory of Reasoned Action model (see figure 2) are behavioural beliefs, normative beliefs, attitude, subjective norm, and intention. Results from studies previously reviewed (Ajzen and Fishbein, 1980, cited by Parminter and Wilson, 2003) have shown that the behavioural belief component is expected to be positively correlated with attitude, while the normative belief component is expected to be positively correlated with the subjective norm".

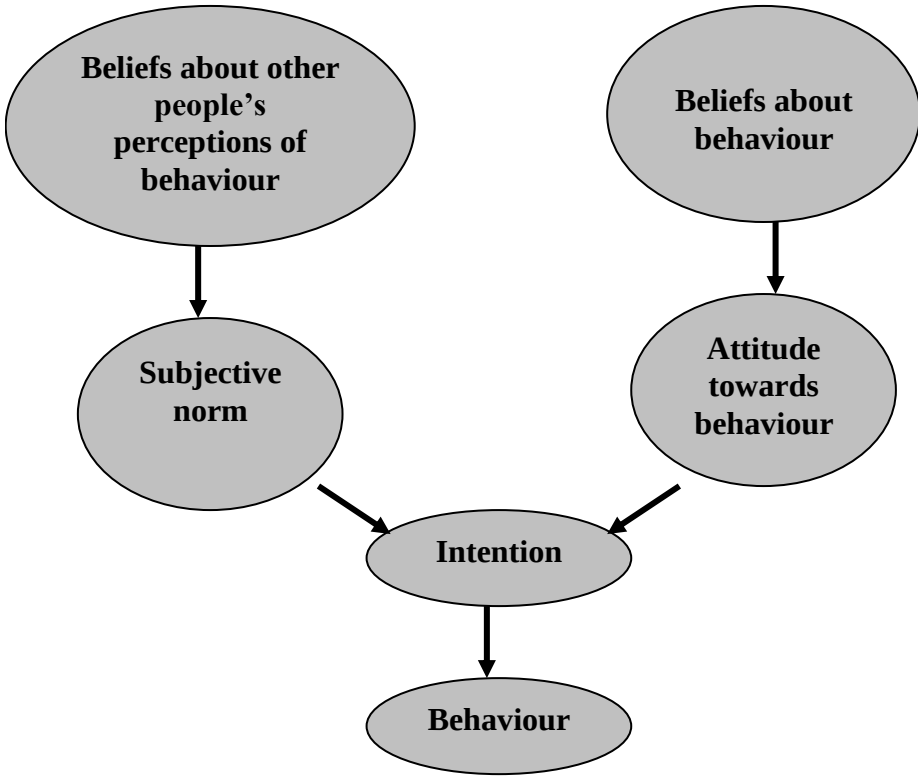
Both attitude and subjective norm are predictive of intention in all of the studies previously reviewed (Ajzen and Fishbein, 1980) and, through intention; they are also precursors to behaviour" (Parminter and Wilson, 2003).

Parminter and Wilson (2003) illustrate the causal sequence of cognition as follows (see Figure 2).

Strengths and weaknesses of the Theory of Reasoned Action

TRA describes the drivers of an individual's behaviour, not how the individual makes a decision to adopt or reject an innovation. The concept of intention to behave in a particular manner may be useful to better understand adoption decision-making and is part of the personal factors of the adoption decision-making model (figure 1).

Figure 2: Representation of the Theory of Reasoned Action (from Parminter and Wilson, 2003)



For example: intention could for instance be associated with behaviours consistent with "successful farming". That is, an individual intends to behave in ways that illustrate success in farming. The use of new technology may be part of these behaviours, hence influencing adoption behaviour. Beliefs, attitudes and subjective norm are internal to and therefore part of the individual.

Asatiani (undated): "Some limitations of the TRA include the inability of the theory, due to its individualistic approach, to consider the role of environmental and structural issues and the linearity of the theory components (Kippax and Crawford, 1993, cited by Asatiani). Individuals may first change their behaviour and then their beliefs/attitudes about it".

Consumer Behaviour Theory

Assumptions and concepts

Consumer Behaviour Theory (CBT) takes the needs of producers and uses this as a starting point for evaluating the advantages and disadvantages of an innovation. CBT assumes that a prospective adopter actively searches for information and devotes a great deal of time and energy in making decisions. CBT provides a

framework for determining how innovations can contribute to satisfying the needs of the adopters. There is an assumption that a variety of decision processes occur when making the decision whether or not to adopt an innovation. Furthermore, CBT provides criteria for identifying the decision processes occurring in particular circumstances and recognises that different individuals adopts the same products for differing needs (Kaine, 2004). Consumer purchase behaviour is illustrated in figure 3.

Figure 3: Consumer purchase behaviour

	High involvement purchase decision	*Low involvement purchase decision*
Decision making More effort	Complex decision making (e.g. cars) • High motivation to search for information • High effort into learning and discovery • Evaluation both prior to and after purchase	Variety seeking (e.g. snack foods) • Low motivation to search for information • Some effort into learning and discovery • Evaluation after purchase
Habit Less effort	Brand loyalty (e.g. athletic shoes) • Less effort into learning and discovery as consumer already has a product they are satisfied with • Evaluation based on experience with the product	Inertia (e.g. laundry detergent) • No motivation to search for information • No effort put into learning and discovery • Evaluation after purchase

CBT states that the decision to adopt is influenced by the level of consumer involvement in the innovation and the degree of effort consumers are willing to invest in making a purchase decision. The theory proposes that when a potential adopter's involvement is high they tend to engage in complex decision making or brand loyalty depending on the degree of effort they invest (Assael, 1998). The type of purchases that fit into this category are those that are expensive, not purchased often or tied closely to status or image. In the case of farming the purchasing of a new tractor would fit into this category (Kaine, 2004).

Under high involvement conditions the potential adopter is likely to devote a great deal of time to considering the benefits of the innovation at hand and to other alternatives (Kaine, 2004). There is high risk in these decisions. In contrast to this

are low involvement purchases that are normally inexpensive and routinely purchased and have little risk involved (Kaine, 2004).

CBT states that with high involvement purchases adopters will either follow a complex decision making process or brand loyalty. Complex decision making occurs when the consumer is prepared to put a great deal of effort into the process of decision making. Complex decision making is systematic, where the adopter learns about the attributes of products and then develops a set of purchase criteria. This process includes the association of product characteristics with the benefits the adopter seeks, and the selection and adoption of an innovation. If the adopter is satisfied with the product then they are more likely to repurchase at a further date and continued satisfaction will eventually lead to brand loyalty (Kaine, 2004).

Brand loyalty thus represents an adopter's personal commitment, to repeatedly purchase a certain "brand" of innovation. This could change when an adopter experiences a change in their needs, they become dissatisfied by the brand because of continual poor performance, or a demonstrably superior brand may induce a change of brand. Nevertheless, adopters will generally be unwilling to change technologies where the failure of that technology may have a high level of risk associated with it. This is especially the case with certain agricultural innovations (Kaine, 2004).

Strengths and weaknesses of Consumer Behaviour Theory

The application of CBT to the adoption of agricultural innovations suggests that primary producers are likely to be motivated and discriminating purchasers of new technologies. They actively seek information on, and systematically learn about, innovations that are highly relevant to their needs. Starting with end-users needs is a very helpful concept. In circumstances where the failure of an innovation can have serious consequences for the farm enterprise, and existing technologies and practices have proved to be reliable, producers will sensibly resist the introduction of an innovation. This behaviour can be interpreted as resembling brand loyalty and is a rational and strategic response to risk (Kaine, 2004). Moreover CBT does not assume that the population of potential adopters has already been correctly identified, but it provides a framework to do exactly that.

CBT has other useful concepts for the adoption decision-making model, i.e.

- there are a variety of types of decisions and different decision processes are invoked in different circumstances
- different individuals purchase the same product (adopt the same innovation) to satisfy different needs
- the notion of social and psychological risks and their influence on adoption decision-making

We believe that CBT is unclear about categorising potential adopters into "more effort" and "less effort" and "high involvement" and "low involvement" categories. Moreover, CBT does not cater well for individuals who move/switch between these poles.

Discussion

It is generally accepted that the adoption of an innovation is a process that does not simply happen instantaneously or spontaneously. In order to study the process it can be broken down into different stages and we chose a psychological perspective to do so (see figure 1). We reviewed several theoretical frameworks to better inform our concept of the adoption process and found that they complement each other in a variety of ways. Where the frameworks add and what they bring to the adoption process concept is summarised in table 2.

Extension theory is very helpful to better inform the contextual factors and brings perspective to the communication channels and mechanisms used to influence the individual. In terms of the contextual factors, Bounded Rationality indicates that perfect information is not possible, i.e. individuals cannot get perfect information to help them with decision-making. BR further points out that individuals are bound by their resources, i.e. time, money, knowledge, etc. when they make decisions and they therefore accept reasonable outcomes from their decisions – called "satisficing". BR also adds to the personal factors in that it indicates that individuals' goals are important when they make decisions and they are only partly rational in their decision-making.

Diffusion theory is a meta-theory that adds much to better informing the adoption process. It describes, through the innovation-decision process theory, five phases of the adoption process. These phases align very well with our concept of the adoption process (figure 1). Diffusion theory specifically adds to the contextual factors by (refer table 1):

- discussing the role of communication channels and mechanisms
- indicating the importance of the influences of the social system within which an individual lives
- pointing out the role of promotion efforts
- showing that the innovation itself is important and has five particular attributes viz. relative advantage, compatibility, complexity, trialability and observability.

Diffusion theory also adds to the personal factors by showing that adoption is a mental process with five phases (refer table 1). Moreover, it points to the role of an individual's attitude towards the innovation and that there are different types of decision-makers i.e. collective, individual or institutional. Diffusion theory also highlights the notion and role that an individual's perception of the innovation plays in the process.

Table 2 summarises the elements that each of the five theoretical frameworks bring to the adoption process. From table 2 it is clear that the Theory of Reasoned Action is a psychological theory and therefore adds to the personal factors of the adoption process, and not to the contextual factors. It shows that concepts like intention to behave, attitude towards particular behaviours, subjective norms, beliefs about own behaviour and beliefs about other people's perception of behaviour are important drivers of decision-making.

Consumer Behaviour Theory as a theory of adoption in agriculture is about complex decision-making. It focuses on both contextual and personal factors. In terms of contextual factors it adds to the adoption process the notion that different circumstances invoke different decision processes and that the innovation itself is

important because the same innovation can satisfy different needs. In terms of the personal factors it points out that the needs of the individual are important, that in agriculture adoption decisions are about high involvement in the decision and high effort put into making the decision. It also points out that an individual takes social and psychological risks when making a decision.

We believe that these five theoretical frameworks are complementary and add to the adoption process (figure 1). Making use of their different concepts and notions can help to better understand a few aspects of the adoption process, like:

- which communication processes and mechanisms are useful for behaviour change
- how promotion efforts influence decision-making
- why and how individuals make decisions without perfect information
- why individuals make decisions that don't maximise outcomes
- how resource constraints influence decision-making
- how individuals' goals influence their decision-making
- how and why social systems influence individual's decision-making
- how different combinations of the characteristics of an innovation impact on an individual's decision-making about the innovation
- how individuals make collective decisions
- how attitudes, perceptions and beliefs impact on decision-making
- which circumstances invoke which type of decisions
- which needs of an individual are satisfied by the same and different innovations
- an individual's involvement in decision-making for different innovations
- the effort an individual will put into making a particular decision
- which social and psychological risks and individual takes when making a decision

The frameworks have different disciplinary roots but we found no contradiction between them. They can be used in a complementary way to study the adoption process.

Table 2 summarises the contributions of the different theoretical frameworks to the adoption process as outlined in figure 1.

Table 2: Theoretical frameworks and the adoption process

Aspect of the adoption process	Theoretical framework				
	Extension theory	**Bounded rationality**	**Diffusion theory**	**Theory of reasoned action**	**Consumer behaviour theory**
Disciplinary roots	Rural sociology, social psychology and communication	Psychology (of problem solving)	Rural sociology, anthropology, education, geography	Psychology	Marketing
In general, regarding adoption…	Extension theory is about communication processes and mechanisms for change	BR is about individuals accepting reasonable outcomes from their decisions - "satisficing".	A meta-theory describing how an innovation gets adopted and then spread (diffuse) among a population.	TRA is about the inner (psychological) drivers of an individual's behaviour	In terms of adoption CBA is about (complex) decision-making
The individual's context or environment	Describes communication processes and mechanisms for change	Perfect information is not obtainable Resources play a role in decision-making, don't assume perfect resources	The individual innovativeness theory states that the adoption process is influenced by 1) Communication channels, 2) nature of the social system, and 3) extent of promotion efforts		Different circumstances invoke different decision processes The same innovation can satisfy different needs – so the quantitative specification of the relationship is non-linear
The individual self		Individual's goals are important.	Type of decision-maker – collective,	Intention to behave Attitude towards	The needs of the individual are

	Individuals are only partly rational in their decision-making	individual or organisation The individual's attitude towards innovation (theory of rate of adoption) Perception of innovation, using 5 attributes (theory of perceived attributes)	behaviour Subjective norm Beliefs about behaviour Beliefs about other people's perceptions of behaviour	important Involvement in purchase decision Effort put into decision Social and psychological risks when making a decision

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