

# **Factors Motivating and Inhibiting the use of Web Commerce by Rural Small Businesses**

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## **Abstract**

*Web Commerce (or WC) use by small business has received increasing attention by eCommerce researchers. It is presently unclear, however, what factors motivate and inhibit the use of WC by small businesses in rural/regional areas. These factors must be identified, and then addressed, so that these businesses can exploit WC and remain competitive. This paper develops a preliminary model of factors motivating and inhibiting rural small business use of WC from relevant bodies of theory: diffusion of innovation; the nature of small business; IT use by small business; the WC literature; and the literature on IT enabled rural/regional development. This model will form the basis of empirical investigation which will refine the model further.*

## **Keywords**

small business, diffusion of innovation, world wide web, electronic commerce

## **INTRODUCTION**

Small business use of the Web (or the Internet generally) has received considerable attention by eCommerce researchers worldwide (see, for example, Lymer et al. 1997; Poon and Swatman 1997a; 1997b; 1998b). This is not surprising because small businesses play a significant role in most western economies (Lymer et al. 1997), and because the Web can provide these businesses with a range of benefits including a relatively inexpensive means of accessing global markets and a low cost communication medium (Poon and Swatman 1997a).

Despite the benefits of Web Commerce (WC) for small businesses, they are not adopting it as rapidly as anticipated (Poon and Swatman 1998b). Writers in the field have suggested a variety of reasons for this slow rate of adoption, including: the lack of management enthusiasm and entrepreneurship, external pressure and support (Poon and Swatman 1997b); the perceived lack of suitability for their business, its complexity and cost (Telstra 1999); the need for immediate returns, resistance to change, survival in the short term (Lawrence 1997); and the perceived security risks of WC (Dowler and Lawrence-Slater 1998).

The need to address this slow rate of Web adoption by small businesses in rural and regional areas (in Australia, at least) has been demonstrated clearly by the Australian Government's view that such businesses must become involved in the Information Economy for their survival (National Office of the Information Economy 1998). This is not surprising, given their physical (and economic) *distance* from both metropolitan and international markets (Cavill 1997a; Cavill et al. 1997). Despite this there is relatively little research into Australian rural small business use of WC (notable exceptions include Groves 1999a; 1999b).

What is lacking, however, is a comprehensive model of the factors motivating and inhibiting the use of WC by small businesses in rural areas, which provides a framework for empirical research in this area. In contrast, there are a number of models which classify Web (or Internet) use by organisations (see Burgess and Cooper 1999 for a summary). Burgess and Cooper (1999) take a step further in arguing that, while these classifications are useful, they do not provide a framework for the stages of growth in the use of the Web by businesses. The authors therefore developed the Model of Internet Commerce Adoption (MICA) which proposes three stages of WC use: promotion, then provision (of information), and the processing (of transactions). There are, in addition, general models of IS use or adoption by organisations which classify influencing factors (for example, Kwon and Zmud 1987), but such factors do not account for context specific factors which might apply in the case of WC use by small business in rural or regional areas.

This paper extends MICA by including motivating and inhibiting factors, derived from relevant disciplines and bodies of literature, to form a comprehensive model of the factors influencing rural small business use of WC. The paper firstly examines the theoretical motivators and inhibitors derived from the diffusion of innovation and Porter's Five Forces Model. It then incorporates factors from contextual bodies of literature on the nature of small business, the use of IT by small business, WC and IT enabled rural and regional development.

Future research will be conducted to refine the model further through empirical work involving small businesses in Australian rural areas. We will then use this model as the basis for determining ways in which to stimulate the uptake of WC by rural small businesses.

## **THEORETICAL MOTIVATORS/INHIBITORS**

### **Diffusion of Innovation**

The diffusion of innovation theory is useful for understanding, in a generic sense, the motivators and inhibitors of WC use, because this theory provides insight into the factors which influence the adoption of innovations (Rogers 1995). More explicitly, it attempts to explain, for instance, the factors which influence the adoption of an innovation, the adoption decision making process used by innovation adopters and the characteristics of innovation adopters (Premkumar and Roberts 1998).

These specific factors are typically categorised by diffusion of innovation theorists. For example, Rogers (1995) suggests that the main categories of innovation adoption factors are innovation characteristics, adopter characteristics (such as their education) and behavioural characteristics (such as the existence of change agents). Authors such as Kwon and Zmud (1987), who have looked specifically at IS implementation by organisations, argue for:

- the inclusion a further two categories – environment characteristics and task characteristics (such as task structure and autonomy); and
- the splitting of adopter characteristics into organisational characteristics (such as company size and funding/time resources) and individual characteristics of adoption decision makers (such as their age, level of education and experience).

Since Kwon and Zmud's classification is related to IS specifically, rather than all innovations generally, their categories and characteristics were used. This was because we believe that the factors identified for IS adoption and implementation were more likely to be applicable to WC adoption and use. Table 1 provides a description of the diffusion of innovation factors by Kwon and Zmud (1987), unless otherwise acknowledged.

Factors	Description	Factors	Description
<b>Innovation Factors</b>		<b>Organisational Factors</b>	
Relative Advantage	The degree to which using the innovation is perceived as being better than using the practice it supercedes (Karahana et al. 1999).	Top Management Support	The greater the support from top management, the more likely the innovation will be adopted.
Communicability	The ease of communicating the benefits of or reasons for adopting the innovation to the adopter.	Size	The degree to which the size of the organisation will affect the innovation adoption. (Lehman 1985).
Cost-effectiveness	The degree to which benefits of using the innovation supercede the cost.	Quality	The degree to which using the innovation will affect the quality of the organisation.
Compatibility	The degree to which the innovation is perceived as being consistent with existing values, past experiences and needs of the potential adopter (Rogers 1995).	User Involvement	The extent to which using the innovation will require user involvement.
Complexity	The degree of difficulty associated with understanding and learning the technology (Karahana et al. 1999; Rogers 1995).	Product Champion	The degree to which using the innovation is based on the entrepreneurs nature of the organisation.
Social approval	The approval of the innovation to people in the local and external community.	<b>Individual Factors</b>	
Trialability	The degree to which one can experiment with an innovation on a limited basis before deciding to adopt (Karahana et al. 1999).	Education	The degree to which using the innovation is dependant on their education of the innovation.
Observability	The degree to which observing the innovation in its setting determines adoption.	Age	The degree to which using the innovation is dependant on the age of the individual.
Profitability	The ability of the innovation to generate profitable business.	Experience	The degree to which using the innovation depends on experience with the innovation.
<b>Task Factors</b>		Personal traits	The degree to which using the innovation is dependant on a person's individual traits.
Task Structure	The degree to which day-to-day activities are likely to be affected by adoption.	<b>Environmental Factors</b>	
Autonomy	The degree to which using the innovation will affect the independence of day-to-day activities.	Competitive Pressure	The degree of pressure from competitors likely to influence the decision to adopt (Gatignon and Robertson 1989).
Uncertainty	The degree of hesitance as to how the innovation will affect the day-to-day activities.	External support	The availability of support for implementing and using an information system (Premkumar and Roberts 1998).

Table 1: Diffusion of Innovation in IS (Source: adapted from Kwon and Zmud 1987)

These factors were therefore used as the initial generic motivating and inhibiting factors, which were subsequently examined further in the context of rural small business use of WC.

### Competitive Pressure: Porter's Five Forces Model

It is interesting to note from Table 1 that, unlike the other categories of characteristics, environment factors describing how an organisation's environment might influence their adoption and use of an innovation were rather limited. For this reason, we looked at Porter's (1980) Five Forces Model to provide further insight into this particular category of factors: rivalry; bargaining power of customers; bargaining power of suppliers; threat of new entrants; and threat of substitute products/services. Each force in this theoretical model provides a further dimension to the competitive pressure factor identified in Table 1. The forces therefore provide more insight into the impact of external factors on an organisations adoption and use of innovations, because an innovation such as the Web could be employed, for instance, to react to these forces. The five forces were therefore used to extend the competitive pressure environmental factor in Table 1.

## CONTEXTUAL MOTIVATORS/INHIBITORS

The resulting theoretical motivating and inhibiting factors identified in the previous section were investigated in the context of rural small business use of WC using relevant bodies of literature. The purpose was to determine whether the theoretical factors were relevant and whether new factors were needed to understand the factors motivating and inhibiting rural small business use of WC. For each body of literature, the relevant diffusion of innovation categories (shown in Table 1), where applicable, are addressed in turn:

## The Nature of Small Business

Much research has been conducted into or provides insight into the unique nature of small business (see, for instance, Delone 1988; MacGregor et al. 1996; Petric et al. 1996; Poon et al. 1996; Reynolds et al. 1994). Small businesses are different to large organisations for such reasons as their small numbers of employees and the subsequent influence of a single person (that is, the owner/manager) on the firm (see Parker 1997; Poon et al. 1996). The small business literature therefore provided valuable insight into the organisational, individual (that is, owner/manager characteristics) and environmental factors likely to influence rural small business use of WC (see Table 2, where new factors from those in Table 1 are italicised).

Factor	Literature Support for the Importance of the Factor
<b>Organisational Factors</b>	
Size – <i>lack of specialist staff</i>	This factor is important in the context of small business, because their small number of employees tends to mean they <u>lack specialist staff</u> in areas such as technology use (Reynolds et al. 1994). This lack of specialist personnel might hinder or prevent WC adoption if the owner believes this technology can only be employed using specialist staff.
<i>Strong owner influence</i>	This factor is important because small firms tend to have a strong owner/manager influence (Poon et al. 1996; Reynolds et al. 1994). For example, if a small business owner is strong minded, then their strong influence will have a significant impact on decisions (such as innovation adoption) made by the company. This influence is therefore likely to be more significant than that of other managerial staff within the organisation.
<i>Lack of financial resources</i>	This factor is important because small businesses often have difficulty obtaining finance (Poon et al. 1996; see also Reynolds et al. 1994). For this reason, WC might be considered too expensive for many small businesses because they lack financial resources.
<i>Independence</i>	Reynolds et al. (1994) states that small businesses tend to have a strong desire to be independent. This goal of independence allows them to enter niche markets more readily, which might be a potential motivating factor for using WC if independence and entering niche markets is an objective of small businesses.
<i>Maintaining stability</i>	Small businesses tend to be interested in maintaining their stability rather than attempting to increase their market share (Reynolds et al. 1994). This tendency suggests that maintaining stability will be a further factor inhibiting WC use, because WC might be perceived by small businesses as upsetting this stability.
<b>Individual Factors</b>	
Personal traits	This factor might be especially applicable to small businesses. For example, Reynolds et al. (1994) state that the <u>intrusion of family interests</u> can be significant, because very small companies in particular are often family-run. Poon et al. (1996) adds that the <u>innovativeness</u> of small business owner/managers varies, so that this personal trait is likely to influence any decisions (such as innovation adoption) made.
Education and Experience	The education and experience of small firm employees and owner/managers tend to be narrow (Reynolds et al. 1994), so that owner/managers in particular might therefore be less likely to appreciate the value of WC (see Parker 1997).
<b>Environmental Factors</b>	
<i>Bargaining power of customers</i>	Small businesses typically rely heavily on only a few customers (Reynolds et al. 1994), so that they are affected significantly by these customers' bargaining power.
<i>Threat of substitute products</i>	Small businesses tend to have narrow product or service ranges (Reynolds et al. 1994), so that they are more likely to be affected adversely by the threat of substitute products.
<i>Threat of new entrants</i>	Small businesses often have limited market share (Reynolds et al. 1994), so that new entrants into their market might have a significant impact on their business.

Table 2: WC Use Motivating/Inhibiting Factors From the Nature of Small Business Literature

## Information Technology for Small Business

There is a growing body of literature specifically looking at small business and their use of IT, thus extending the insight into motivating and inhibiting factors of WC use provided by the more general literature on the nature of small business. More specifically, the IT for small business literature provided support for many of the theoretical factors identified in Table 1 in

the innovation, task, environmental, organisational and individual categories (see Table 3). New factors from those already identified in Tables 1 or 2 are italicised.

Factor	Literature Support for the Importance of the Factor
<b>Innovation Factors</b>	
Relative advantage	Premkumar and Roberts (1998) suggest that the primary motivation for small businesses to adopt new technologies (such as the Web) is the anticipated benefits these technologies will bring to the company (see also Cragg and King 1993; MacGregor et al. 1998). WC is therefore unlikely to be used by small businesses if they do not anticipate value from its use. Interestingly, Poon et al. (1996) also point out that hype is often a reason for small businesses to commence using the Internet, suggesting that these firms might tend to believe they will gain the benefits promised by WC hype.
Complexity	MacGregor et al.'s (1996) research into small business suggests that these firms tend to avoid complex software (see also Parker 1997). If an innovation, such as WC, is seen as complex or difficult then this will inhibit its use or adoption by small businesses.
Profitability	MacGregor et al. (1998) state that small business use of IT is usually influenced significantly by their predominant use of tangible, short-term measures of performance, cost and benefits. This suggests that small businesses are likely to be motivated to use WC if short-term profitability can be achieved.
Cost-effectiveness	Lymer et al. (1997) suggest that using IT has the potential to reduce costs and increase productivity levels of organisations, including small businesses. Since the Web has the potential to provide these types of benefits to small business, it is possible that such firms might find cost-effectiveness as a motivating factor to use WC.
<i>Improved communication</i>	Lymer et al. (1997) states that small business can use IT successfully to improve communication with trading partners and consumers. This is also a potential of WC, which suggests that this factor might motivate small business use of WC.
<b>Environmental Factors</b>	
Bargaining power of customers/suppliers	Small businesses are often forced to use IT by large companies (Parker 1997; Poon et al. 1996), so that trading partner pressure could be a factor driving their WC use.
External support	Cragg and King (1993) state that consultant support is positively associated with small business success with IT, suggesting that similar external support is likely to be important for WC use as well.
<i>Vendor support</i>	Some authors (see, for instance, MacGregor and Cocks 1994) state that vendor support is positively associated with small business success with IT. This suggests that support from WC vendors (including Internet Service Providers) might have a positive influence on WC use by small businesses.
<b>Organisational Factors</b>	
Top management commitment	According to Delone (1988), IT commitment has been repeatedly identified in small business IT studies as being essential.
Product champion	This factor is considered by some authors (see MacGregor et al. 1996) to be significant in increasing IT use by small business. For example, Martin (1989) states that product champions (particularly from management) are important for successful Internet, as well as IT, use by small business (see also Poon and Swatman 1997a).
Lack of financial resources	This factor is considered significant because small businesses often lack the financial resources to develop and manage their own information systems (Lawrence and Chau 1998). This is therefore likely to be a factor in small business WC use also.
<b>Individual Factors</b>	
<i>Skills</i>	Employees of small businesses tend to have limited skills and expertise (Reynolds et al. 1994), especially when it comes to the use of IT (MacGregor et al. 1996; see also Cragg and King 1993). In the context of WC, this suggests that small business employees require training to develop skills which might hinder WC use and its value.
<i>Time</i>	This factor has been identified by a number of authors (see, for instance, Cragg and King 1993; MacGregor et al. 1998), because small businesses have little time to devote to developing new applications (such as Web presence's) or learning about the potential IT.
<b>Task Factors</b>	
Task structure	Petric et al. (1996) found that small businesses quite often adapt their business tasks (or processes) to match the software they use.

Table 3: WC Use Motivating/Inhibiting Factors From the IT for Small Business Literature

## Web Commerce Literature

The diffusion of innovation theory suggests that the characteristics of the innovation itself will influence its use or adoption (see Rogers 1995), so we therefore examined specific innovation, environmental and individual factors introduced by the WC literature. These factors are summarised in Table 4, where new factors from those in Tables 1-3 are italicised.

Factor	Literature Support for the Importance of the Factor
<b>Innovation Factors</b>	
<i>Security</i>	The issue of <i>security</i> is raised on a number of occasions in the WC literature (see, for instance, McComb 1998; Phillips 1998; Telstra 1999). For example, Telstra (1999) points out that small business tends to be concerned about the security of payments via the Web, while McComb (1998) suggests that many businesses are worried about hackers gaining access to credit card details, bank records, etc.
Cost-effectiveness	The <i>cost-effectiveness</i> factor from Table 1 is raised again in the WC literature because it is seen as a low cost communication medium (see Poon and Swatman 1997a). McComb (1998) also argues that Web site space is relatively inexpensive even for small businesses.
<b>Environmental Factors</b>	
Culture	The WC literature also introduces the environmentally-based <i>Cultural</i> factor as a possible inhibitor to WC use by businesses (see, for example, Leidner 1999). The cultural factor takes the form of language barriers and possible variances in business practices between different cultures where international trade might take place. This has the potential to affect small firms in particular due to their lack of resources to address this type of problem.
<b>Individual Factors</b>	
Education	The importance of knowledge of or education about WC by owner/managers of small businesses is evident when considering the range of so-called “success factors” or techniques associated with WC use. These businesses need to learn about the new ways in which to use WC effectively in order to achieve the technology’s potential benefits. For example, authors such as McComb (1998) and Phillips (1998) discuss techniques or strategies for WC use, such as the information to provide, Web site design considerations, how to market a Web site, the importance of joining relevant newsgroups and so on. While books and other sources abound with potentially useful WC strategies, owner/managers might find specially tailored and focused education more useful (see Parker 1997).

Table 4: WC Use Motivating/Inhibiting Factors From the Web Commerce Literature

## Information Technology Rural and Regional Development

There is little doubt about the wide ranging impact of IT, but many researchers in business and sociology have questioned whether the impact of technology, and in this case WC, will be even and whether certain regions like rural areas will be adversely affected by the technologies (NTIA 1995a). The embedding of the technological properties of the Web into the organisational structure of an initiative for regional development has been instrumental in yielding cooperation among SMEs (Tschanz and Klein 1997). For this reason, there are likely to be a number of factors motivating and inhibiting WC use by small businesses in rural areas. Indeed, this literature confirms many of the factors already identified in Tables 1-4, and introduces new factors which are italicised in Table 5.

Factor	Literature Support for the Importance of the Factor
<b>Innovation Factors</b>	
Relative advantage	WC opens up new markets that were not previously accessible to rural businesses (Allen et al. 1993). Further, Groves and Da Rin (1999b) suggest that, rural businesses are using Web commerce for information gathering. This suggests that rural small business can gain relative advantage from WC.
Social approval	One source of threat is that businesses have the opportunity to bypass these rural areas and relocate in developing countries where labour and overhead costs are much lower (Premkumar and Roberts 1998). Declining populations in rural and regional communities (Wilde and Swatman 1999) could also see activity levels fall below critical mass. This might cause problems as social approval will be lacking in these areas, which is therefore likely to inhibit WC adoption and use by small businesses.
Cost-effectiveness	Cavill (1997a) identifies relevant recommendations for the development of on-line infrastructure and services development in Regional and Rural Australia, relating to the affordability of access, with unlimited local call access. Interestingly, it opens up new opportunities to gain a competitive edge in terms of lower labour costs and overheads (Allen et al. 1993) and investment in these technologies which can lead to economic benefits through more price competition and lower inventory costs (NTIA 1995b). Groves (1999b) suggests that a Web site can be provided quite cheaply to a rural business, although noting that costs escalate exponentially with sophistication, interactivity and maintenance.
Improved communication	Communication technologies (such as the Web) provide small businesses in rural communities with the means by which to communicate with customers despite their geographical isolation (see Premkumar and Roberts 1998).
Security	According to Groves and Da Rin (1999b) concerns by small business in rural regions are being largely overstated, but their perceptions are however real and inhibiting.
<i>Future relative advantage</i>	Groves and Da Rin (1999a) suggest that rural businesses are now considering using WC in the future for Internet banking. For this reason, WC use might be influenced by a perceived <i>future</i> rather than <i>current</i> relative advantage.
<i>Infrastructure – Market forces</i>	According to Premkumar and Roberts (1998), telecommunications infrastructures tend to follow a similar pattern as the road system – that is, market forces which dominate the creation of the telecommunications infrastructure in certain areas on the basis of factors such as population. This might inhibit development of ‘universal access’ to all areas in country areas, since demand in urban areas is greater than rural areas (Cavill 1997a; Parker et al. 1992).
<i>Infrastructure - Access</i>	A key problem is delivering services to rural and regional areas (Cavill 1997a; Cavill et al. 1997; Groves 1999a) because rural and regional towns are not being combined into interconnected networks. The importance of geographic position is being traded for how well the area is connected (Cavill et al. 1997). Therefore rural businesses are caught in a vicious cycle – lack of communications infrastructure reduces the demand for communications services, which further constrain future investments in infrastructure (NTIA 1995a). This could result in rural businesses being further alienated from mainstream economic activity (Parker et al. 1992).
<i>Infrastructure - Speed</i>	Groves (1999a) suggests that the lower quality telecommunications infrastructure in rural Australia means that Web sites accessed by WC users in rural areas should be designed with minimal download data. This implies that the lack of Web sites designed for rural WC users might inhibit WC uptake.
<i>Infrastructure - Increased reliance</i>	Where services such as banking are being withdrawn from rural areas, it is likely that the services will be replaced with interactive telecommunications substitutes (Wilde and Swatman 1997). This denotes the importance of infrastructure in rural areas, because without it businesses will be unable to access such services.
<b>Task Factors</b>	
Task structure	NTIA (1995b) state that WC can reduce task structure complexity because it offers a new distribution channel which can avoid intermediaries. This factor therefore has a motivating potential for firms in rural areas in which many intermediaries might exist.

Factor	Literature Support for the Importance of the Factor
<b>Environmental Factors</b>	
External support	According to Cavill (1999) social and community development can be improved by providing access to such support services as education and training and government (online) services and information (see also Cavill 1997a). However, policy measures to encourage improved regional functioning through the use of advanced applications like remote conferencing, telework, remote transactions and access to information are needed (Cavill 1999). These external support mechanisms are needed to help education and training. The lack of this type of external support could therefore inhibit WC use by businesses in rural areas.
<i>Rivalry</i>	Cavill (1999) mentions the benefits of IT such as inward investment through enhancing the appeal of the location, the strengthening of domestic and international links, a strengthening in competitiveness (Cavill 1997b) of large and small business by facilitating collaboration through enterprise networks.
<i>Local support</i>	Support in the local area is considered to be important in regional areas (Cavill 1997b), and can be provided by getting organisations to collaborate with one another as groups. This might then motivate WC use by these businesses.
<i>Legal issues</i>	Other issues mentioned include rural consumer concerns about protection, privacy and taxation (Groves and Da Rin 1999b). Legal issues might therefore present an inhibitor to WC use by rural businesses.
<b>Individual Factors</b>	
Education	The IT rural and regional development literature suggests that the individual factor <i>Education</i> identified in Table 1 are applicable to rural and regional areas and, therefore, rural small businesses. Cavill (1997a) states that education is required in rural areas because these people generally have a lack of understanding of technical terminology. Further, Groves and Da Rin (1999a) suggest rural businesses are using WC for education, which can be delivered through support channels.
Time	The literature on rural and regional development of IT also confirms the previously mentioned contextual organisational factor <i>Time</i> . NTIA (1995b) states that WC has the potential to reduce business travel by rural people, because they can communicate online rather than having to conduct excessive face-to-face meetings.

Table 5: WC Use Motivating/Inhibiting Factors From the Rural/Regional IT Literature

## CONCLUSIONS AND FUTURE RESEARCH

Figure 1 summarises the factors motivating and inhibiting rural small business use of WC identified from a range of bodies of relevant literature – factors which appear to affect the progress of such firms through the stages of WC development – and extends to MICA framework developed by Burgess and Cooper (1999). This paper shows that the set of factors provided by Kwon and Zmud (1987) have largely been confirmed by the contextual literature as being applicable in this area, but it has also identified a number of factors specific to the Web, to small businesses or to rural settings have also resulted from this analysis. We also anticipate that many of these factors will apply more generally to the adoption and use of WC by all small businesses – not just those in rural areas.

Future qualitative research into rural small business use of WC will be conducted, in the form of semi-structured interviews, to investigate the relevance of these factors, to identify new factors and, subsequently, to refine the model further. More specifically, we will interview rural small business owner/managers using open-ended questions which will not be biased by nor based on the factors in Figure 1. By using this research approach, we anticipate that we can identify new factors which have not already been derived by the literature.

We will investigate the model in Figure 1 further by conducting surveys of rural small businesses to determine with more certainty the impact of each factor on WC use/adoption and the relative importance or ranking of the various factors. This survey research will be complemented by in-depth multiple case studies so that we can develop further insight into the way in which these factors inhibit and/or motivate WC use/adoption, and so that identify



mechanisms for addressing the inhibitors and invoking the motivators to stimulate more effective use of WC by rural small businesses.

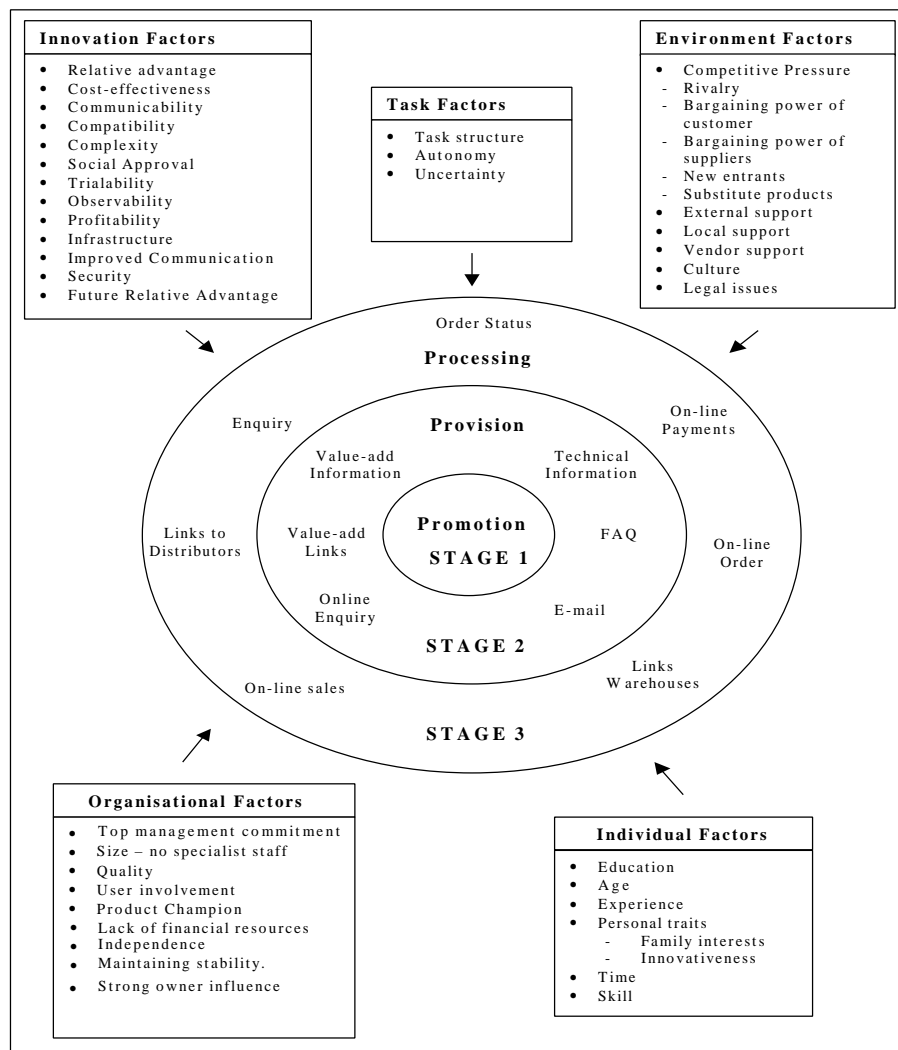


Figure 1: Factors Motivating and Inhibiting Rural Small Business use of WC

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