Presenting a model for knowledge and information sharing in agricultural entrepreneurship within virtual communities

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Abstract:
The employment and unemployment of workers are crucial topics in today's human societies. In our nation, the significant role played in the development process is due to the imbalance in economic, geographical, cultural, demographic, and political structures. The problem of unemployment has become ingrained in developing countries, with governments struggling to address the technology requirements of their populations. Numerous nations view entrepreneurship as an answer to joblessness and prioritize it significantly. Virtual communities are essential in education and sharing knowledge. Despite extensive research on sharing knowledge and information in virtual communities, there has been no study on knowledge exchange in virtual communities using mobile messaging tools. While mobile messaging tool-based virtual communities have been created for networking and sharing entrepreneurial knowledge, information, and business experiences within the country, little is known about the determining factors for sharing entrepreneurial knowledge in these communities. Therefore, this research aims to answer the question: What factors influence the sharing of entrepreneurial knowledge and information in virtual communities? In the end, based on these factors and existing limitations, a model is presented that can serve as a guide in similar studies and different situations.
Keywords: Agricultural entrepreneurship, entrepreneurial knowledge and information, virtual communities.

Introduction

Employment and unemployment of the workforce are among the most important issues in contemporary human societies, particularly in our country, where economic, geographical, cultural, demographic, and political imbalances significantly influence the development process (Zali & Razavi, 2008). The unemployment crisis in developing societies has deep roots, and governments are unable to meet the technological needs of their communities (Manori Fard et al., 2012). Many countries consider entrepreneurship as a solution to unemployment and give it extraordinary attention (Noh Ibrahim & Tondaste, 2008). Strengthening entrepreneurship and creating the right environment for its development is considered a tool for economic progress, especially in developing countries, as high-impact entrepreneurial activities lead to economic development, job creation, innovation, and competitiveness (Ahmadi & Omidi Najafabadi, 2009). Information and communication are two essential tools required for any entrepreneurial activity (Hejazi, 2004). In developed countries, the internet is one of the most important tools for entrepreneurs (Jalili et al., 2012). The expansion of the internet has facilitated knowledge sharing (Fang & Chiu, 2010). Virtual communities can play an important

role in education and knowledge sharing (Tamjidyamcholo et al., 2014), and they represent a group of individuals or business partners who can interact and share their interests and experiences (Ellis Porter, 2004). Research shows that the most important factor in transforming entrepreneurial potential into action is the development of an entrepreneurial spirit in individuals through education. The most suitable environment for cultivating entrepreneurs in any society is educational settings, especially schools (from primary to high school). Thus, the human factor is the most important aspect of entrepreneurship, and educating the human element has a significant impact on the advancement of entrepreneurship. In entrepreneurial education, to acquire the necessary skills and traits, it is essential to provide the required knowledge and information (Fekri et al., 2012). The knowledge gained from entrepreneurial education programs has a positive impact on individuals' attitudes. These programs promote self-employment and enable individuals to gain the knowledge and skills needed to start a new business (Scuotto, V., and Morellato, 2013). Entrepreneurial knowledge refers to theoretical knowledge and work experience that involve developing a set of mental patterns over time, enabling entrepreneurs to understand, refine, analyze, decide, and act more effectively on opportunities than others (Baqersad et al., 2013). Sharing knowledge leads to the exchange of ideas. Ideas have the greatest impact when they are widely shared and utilized, rather than being limited to a few individuals (Pour Serajian et al., 2013). Various tools, such as video conferencing, email, face-to-face meetings, and phone conferences, have been evaluated and introduced for knowledge and information sharing (Chaharsoughi et al., 2011). Other tools for sharing knowledge and information

include social networks like LinkedIn, WhatsApp, Viber, Hike, Telegram, Beetalk, KakaoTalk, Instagram, Bisphone, Line, WeChat, Tango, ChatOn, and Snapchat (Moise & Kourosro, 2014). As the literature review shows, numerous studies have been conducted on knowledge and information sharing in virtual communities, but no research has been done on knowledge exchange in mobile messaging-based virtual communities. On the other hand, while mobile messaging-based virtual communities have been created for networking and sharing entrepreneurial knowledge, information, and business experiences within the country (for example, the group of agricultural entrepreneur students and graduates, and the group of agricultural graduates and students on LinkedIn; the idea commercialization group on WhatsApp; the Tehran Entrepreneurs group; the agricultural inputs distribution group and the ornamental flowers cultivation group on Viber; the Young Researchers group on Line; and the Agricultural Magazine group on Telegram), there is little understanding of the extent of entrepreneurial knowledge sharing in virtual communities and the determining factors for this sharing. Therefore, the aim of this research is to examine the determining factors for agricultural entrepreneurial knowledge sharing in virtual communities.

Methodology:
The information for this study was gathered using a method that involved visiting libraries and conducting searches on the internet. This study seeks to discover the influences on the exchange of entrepreneurial knowledge and information in online communities through an analysis of existing empirical studies. Additionally, taking into account the current constraints in this area, a suitable framework will be developed for upcoming research.

Results and Discussion:

Since the exchange of knowledge and information in virtual spaces requires the acceptance and use of new technology, particularly the use of virtual communities in this research, related studies on each of the factors influencing knowledge sharing and technology acceptance have been reviewed separately.

Gaining Credibility and Reputation:

Credibility refers to the degree of belief that participation can enhance personal reputation and credibility through knowledge sharing (Hsu & Lin, 2008). Various studies have shown that gaining credibility and reputation affects the intention and behavior of knowledge sharing. For instance, Akhavan et al. (2009) identified factors such as trust, personal credibility, job security, incentives, and motivational factors as individual factors, and teamwork, employee training, and engagement as group factors influencing the success of knowledge sharing. Pi et al. (2013), in a study titled "Investigating Knowledge Sharing among Facebook Social Network Members," identified credibility as a key factor, with findings showing that reputation and credibility positively affect knowledge sharing behavior. Similarly, Vasko and Farj (2005) concluded that when individuals recognize their professional reputation, knowledge sharing increases. Papadopoulos et al. (2013) also demonstrated that credibility and reputation have a significant positive effect on the intention to share knowledge in employee blogs.

Habit:

Triandis (1980) defines habit as a learned sequence of actions that automatically responds to specific conditions, without conscious awareness. Habit is an automatic response to specific stimuli (Limayem & Hirt, 2003). When a behavior is repeatedly performed in the past, future behavior increasingly comes under the control of automatic cognitive processes (Liao et al.,

2006). Previous studies have examined the impact of habit on various variables, including actual system use, technology acceptance, and intention. Barnes (2011) found that perceptions of usefulness, enjoyment, and habit significantly influence the intention to continue a behavior, with habit having a direct effect on behavior. Hei and Wei (2008) concluded that frequent use of technology turns knowledge sharing into a habit, reducing deliberate behavior. Their findings indicated that habit has a direct and significant impact on both the intention to share and the actual sharing of knowledge. Giffen (2003) also reported a positive and significant relationship between perceived usefulness, ease of use, and habit, arguing that through continuous use of technology, users learn more about its potential benefits, increasing their perception of its usefulness.

Subjective Norms:

Subjective norms refer to an individual's belief about the expectations of significant others regarding a specific behavior. Subjective norms reflect the social pressure one feels to perform a particular behavior (Fayol et al., 2006). In societies where entrepreneurship is socially legitimate, there is more attention to entrepreneurship as a desirable activity, with incentives such as financial support for entrepreneurial businesses. As a result, societal norms align with entrepreneurial activities, supporting the entrepreneur's potential, which strengthens their intention to start a business (Pournazari et al., 2014). Several studies have examined the influence of subjective norms on technology acceptance, intention, and behavior. Rahmanian et al.(2012) found a positive relationship between subjective norms and students' entrepreneurial intentions, suggesting that societal norms aligned with entrepreneurial activities encourage individuals to start businesses.

Montazadeh (2010) stated in his master's thesis titled "Examining the Environmental Behaviors of Farmers in Shiraz County" that the opinions of reference individuals had a positive, significant, and relatively moderate relationship with the environmental behaviors of farmers. This means that farmers who engaged more in environmental behaviors believed they received more social pressure from relatives and references to engage in such behaviors and were more encouraged and motivated. Baharlooie and colleagues (2014) concluded in their research that there is a positive correlation between subjective norms and the willingness to use information technology ethically. Subjective norms and attitudes towards using technology have a direct and significant effect on the intention to use technology ethically. The results of the research by Haqparast et al. (2014) showed that there is no significant relationship between subjective norms and actual use. Hsu and Lin (2008) concluded in their study that subjective norms do not have a direct effect on users' intention to participate in blogs. The findings of Soleimani and Zarafshani (2011) indicated that self-efficacy, subjective norms, and attitudes towards using information technology had a positive and significant effect on the decision to use information technology. Hsu et al. (2007) in a study titled "Knowledge Sharing Behavior in Virtual Communities: The Relationship Between Trust, Self-Efficacy, and Expectations" found that there is no positive relationship between subjective norms and the intention to use blogs, and subjective norms do not have a direct effect on knowledge sharing behavior in virtual communities. The results of the research by Ghafari-Ashtiani et al. (2011) showed that subjective norms had a positive impact on perceived usefulness and the intention to reuse e-commerce websites. Punnoose (2012) concluded in his research

that subjective norms have a direct and positive effect on perceived usefulness, perceived ease of use, and behavioral intention. Park (2009) stated in his study that subjective norms have a significant positive direct effect on attitudes towards use, perceived usefulness, and behavioral intention, but no significant positive effect on perceived ease of use. Pi and colleagues (2013) indicated that subjective norms have a significant direct effect on attitudes towards knowledge sharing and the intention to share knowledge. Chen and Huang (2010) categorized subjective norms, self-efficacy, and trust as exogenous latent constructs in their study, whereas knowledge and information sharing behavior and knowledge and information seeking behavior were classified as endogenous latent variables. The findings of their study revealed that knowledge sharing behavior was negatively impacted by subjective norms.

Compatibility:
Compatibility involves new ideas being easily accepted when they align with existing values, past experiences, and individuals' needs. Researchers have demonstrated the significance and value of total alignment in knowledge and information exchange for enhancing individual creativity in generating new ideas (Huang & Cheng, 2013). Eschper and Parvaneh (2004) in their research titled "The Acceptance and Use of Information and Communication Technology Model" identified social influence, compatibility, and facilitating conditions as contextual factors affecting behavioral intention. Keshavarzi (2007) introduced compatibility as one of the technological factors affecting knowledge sharing. Lin et al. (2009) identified compatibility and relative advantage as factors influencing knowledge sharing in their research, and their findings showed that compatibility has a significant positive relationship with the intention to share

knowledge. Chen and Huang (2010) mentioned perceived compatibility and perceived relative advantage as factors influencing knowledge sharing. Their findings indicated that perceived relative advantage positively impacts knowledge sharing behavior, with compatibility playing an indirect role. In his study, Park (2009) found that compatibility has a notable impact on perceived ease of use, with a positive effect, and on perceived usefulness, with a negative effect.

Technology Readiness:

Technology readiness is defined as a personal trait that enhances the acceptance of new technologies to achieve personal or professional goals (Chen et al., 2013). It is a mental state resulting from mental enabling factors and inhibitors that collectively determine an individual's propensity to use new technologies (Lievland et al., 2006). The four dimensions of technology readiness include optimism, innovativeness, discomfort, and insecurity (Li et al., 2009). Among these dimensions, optimism and innovativeness are seen as facilitators of technology readiness, while discomfort and insecurity act as inhibitors. These dimensions are relatively independent of one another (Chen et al., 2013). Optimism indicates that individuals believe technology is beneficial for them. Innovativeness refers to individuals' tendency to be pioneers and more effective. Discomfort refers to a lack of control over technology, meaning individuals feel they cannot manage technology effectively. Insecurity relates to concerns about the security of technology, reflecting a lack of trust in technology and doubts about using new technologies, which can stem from an inherent fear of technology leading to distrust. When individuals doubt technology, they are less likely to share their knowledge (Hang & Cheng, 2013). Findings from the study by Erdogmus, N., and Esen (2011) indicated a positive correlation between optimism and perceived ease of use, optimism and perceived usefulness, and innovativeness and perceived ease of use. Conversely, there is a negative correlation between insecurity and both perceived usefulness and ease of use. The discomfort items are similar to those used for technology anxiety. Erdogmus, N., and Esen (2011) concluded that optimism and innovativeness regarding technology lead to higher perceptions of ease and usefulness, while high levels of discomfort and insecurity correlate with lower perceptions of usefulness and ease. In the research by Hang and Cheng (2013), optimism, innovativeness, discomfort, insecurity, perceived usefulness, perceived ease of use, and compatibility were identified as factors influencing knowledge sharing. Optimism has a significant positive correlation with perceived usefulness, ease of use, and compatibility, meaning higher levels of optimism increase perceptions of usefulness, ease of use, and compatibility. Innovativeness does not correlate with perceived usefulness but has a significant relationship with ease of use and compatibility, suggesting that higher innovativeness leads to stronger perceptions of ease of use and compatibility. Discomfort does not correlate with ease of use, perceived usefulness, or compatibility, indicating that higher discomfort is associated with lower perceptions of these factors. Insecurity similarly shows no correlation with perceived usefulness, ease of use, or compatibility, meaning high insecurity results in low perceptions of these dimensions.

The Chain Relationship of Perceived Usefulness, Perceived Ease of Use, Behavioral Intention, and Usage Behavior:
Perceived ease of use refers to the degree to which an individual believes that using a technology requires minimal physical and mental effort (Moradi et al., 2010). When an

individual believes that little effort is needed, their behavioral intention to accept technology increases (Li et al., 2011). Perceived usefulness refers to the degree to which an individual believes that using technology can enhance their job performance. Previous studies have shown that perceived usefulness is the most significant determinant of behavioral intention to accept technology. If perceived usefulness increases individuals' performance and productivity, it fosters a positive attitude toward technology acceptance (Tang et al., 2008). If individuals believe technology can meet their and others' needs, they will insist on using it in the learning process. Thus, individuals' agreement to use technology for learning positively influences their attitude towards it. The technology acceptance model demonstrates that if someone believes technology is useful and easy to use, they are more likely to intend to accept and use it. Dorani and Rashidi (2007) found in their research that the perceived ease of using technology has a notable impact on both perceived usefulness and attitudes towards it. Furthermore, the perceived usefulness of information technology greatly influences the choice to utilize it, which in turn influences the actual usage of the technology. The findings of Lang et al. (2011) demonstrated that if users find participating in social networks beneficial, they feel good about it and are more likely to use it. If individuals feel that using social networks is easy, they will perceive it as useful. Their study also indicated that if individuals perceive a social network as beneficial, their intention to use it increases. In the research by Hossein et al. (2013), individual factors, managerial support, perceived usefulness, and organizational rewards were identified as influential factors in knowledge sharing. Their findings showed that perceived

usefulness positively influences the intention to use knowledge management systems. Farahat (2012) concluded in her research that perceived usefulness and perceived ease of use positively affect individuals' behavioral intention for online learning. Perceived ease of use significantly positively impacts perceived usefulness. Salehi and Rezai-Moghadam (2009) found that there is a significant positive relationship between perceived ease of use, perceived usefulness, and attitudes towards the application of technology in soil cultivation practices. The relationship between perceived usefulness and perceived ease of use with the intention to use is 0.27 and 0.34, respectively. Perceived ease of use is one of the influential variables affecting the intention to use soil cultivation technologies, with direct effects significant at the 0.05 level. The influential variables on experts' willingness to use soil cultivation technologies explain 37% of the variability in this variable. Their results also showed a significant positive causal relationship between perceived ease of use and willingness to use. Research conducted by Hadayant and Setiadi (2014) demonstrated that perceived ease of use of collaborative tools has a significant direct effect on perceived usefulness of those tools. Both perceived ease of use and perceived usefulness of collaborative tools have direct and significant effects on students' intention to use them for group assignments. Moreover, their findings indicated that students' intention to use collaborative tools has a significant direct effect on actual usage as supportive tools for group tasks. The study by Khorasani et al. (2011), based on the technology acceptance model, showed that the variables of perceived ease of use, perceived usefulness, attitudes towards electronic learning, and the decision to use electronic learning positively influence the acceptance and usage of electronic learning

among students. The results of Soleimani and Zarafshani's (2011) study indicated that the variables of perceived usefulness and attitudes towards information technology have a significant positive effect on the decision to use it, which in turn has a significant positive effect on actual usage. The research by Lion and Lee (2004) examined senior managers' perceptions of encouraging knowledge sharing among employees, revealing that managers' intentions to share knowledge positively and significantly impact employees' knowledge-sharing behaviors. Additionally, Triandis and Economides (2011) concluded that if the content of a system is clear and useful to individuals and relevant to their courses, they are more likely to use the system. If using the system is perceived as beneficial and easy, they are even more likely to increase their usage. Sussman, S. W., and Siegal (2003) discovered that investors who believe information is valuable and see it as useful are more inclined to utilize information within virtual communities. Yaghoubi and Shakeri (2008) found that there is a strong link between perceived usefulness and attitude and intention to use in the technology acceptance model. This suggests that as customers view online banking services as more useful, their attitude and motivation to use these services also improve. Park et al. (2014) stated in their study that perceived usefulness significantly influences the intention to share information, discovering that the perceived usefulness of virtual communities by members is a crucial factor affecting the intention to share and seek knowledge and information. Investors who are more inclined to share knowledge and information are likely to contribute more in virtual communities. However, the intention to share does not significantly impact information-seeking behavior. The results suggest that investors with a high motivation

to seek information invest more time and effort into it, while the intention to share knowledge has a positive and significant effect on information-sharing behavior. Results of Lagzian et al.'s (2011) research showed that usage behavior is greatly impacted by behavioral intention. Hence, as the willingness of users to utilize e-government services goes up, their level of actual usage will also increase. Findings from the research conducted by Seyed Javadin and Yazdani (2005) indicated a notable correlation between how individuals view the effectiveness of online banking services and their willingness to utilize said services. Simply put, the stronger an individual's belief in the value of online banking services, the more likely they are to use them. The ease of using online banking services is also strongly related to the intention to use them. If customers find online banking services simple to use, they are more inclined to use these services, and the easier they perceive the services to be, the more positive their opinions of their utility will be.
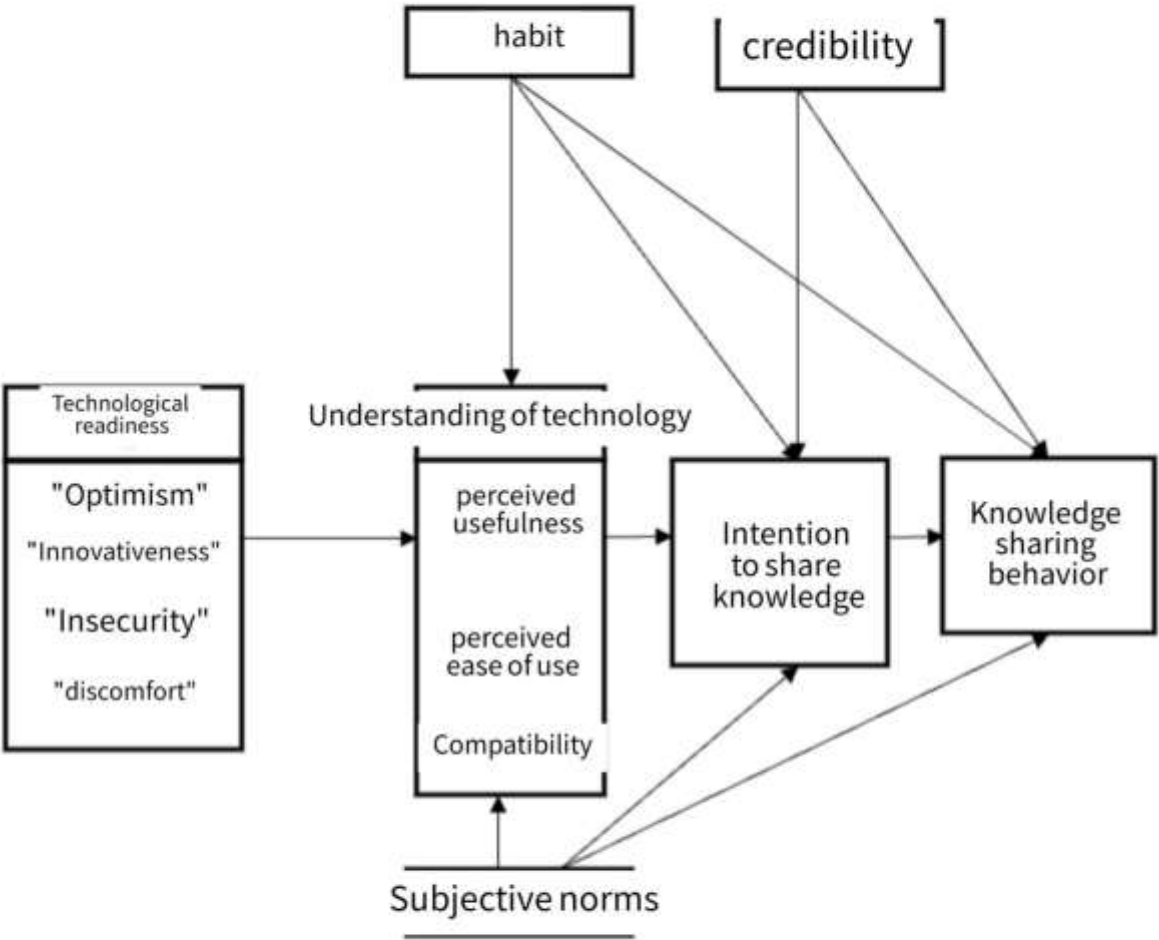
Conclusion

Despite the constraints and recommendations outlined in the literature, and as evidenced, although many studies have been carried out on knowledge and information sharing in virtual communities, there has been a lack of research focusing on knowledge exchange in virtual communities formed via mobile messaging applications. While virtual communities on mobile messaging platforms for networking and sharing entrepreneurial knowledge and experiences exist, little is known about the level of knowledge exchange within these communities and what influences it has. Hence, the purpose of this study is to examine the factors influencing the sharing of entrepreneurial knowledge and information within online communities. In this research, Hang and Cheng (2013) utilized the proposed model to understand the

factors influencing the sharing of agricultural entrepreneurial knowledge and information. This model integrates factors and relationships from the technology acceptance model, technology readiness index, compatibility, and intention. After studying previous studies and analyzing various technology adoption frameworks, the Hang and Cheng model was further developed. Additional elements, like custom, enhancing trustworthiness and standing, personal beliefs, and exchanging knowledge and information behavior, were included in the framework. The research examines how the technology readiness index factors (optimism, innovativeness, insecurity, discomfort) affect specific variables in the technology acceptance model (perceived ease of use and perceived usefulness); the role of subjective norms on certain variables in the technology acceptance model; the intent to share agricultural entrepreneurial knowledge and information; and the behavior of sharing agricultural entrepreneurial knowledge and information. It also evaluates how perceived ease of use, perceived usefulness, and compatibility impact sharing agricultural entrepreneurial knowledge and information, along with habit, credibility, and reputation on sharing intention and behavior. Ultimately, it examines how the intention to share agricultural entrepreneurial knowledge affects the actual behavior of sharing that knowledge.

Model for Sharing Agricultural Entrepreneurial Knowledge and Information in Virtual Communities

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