

THE IMPACT OF INDIVIDUAL'S IDENTITIES ON THE INFUSION OF INFORMATION SYSTEMS WITHIN ORGANISATIONS

Research in Progress

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Abstract

Organisations continue to invest substantially in enterprise systems with the planned expectations that employees will utilise these technologies to enhance organisational competitive advantages in a progressive global marketplace. However, researchers have found that the functional potential of many of these systems are underutilised and rarely infused into individuals' work practices. Much of the literature on IS infusion has been done at the organisational level, with little attention paid on user characteristics and their intrinsic motivations. As such this paper proposes to examine the influence of individuals' IT identity and IS infusion role identity on IS infusion. Identity theories are adopted to conceptualise a research model and investigate the relationships between these factors. A survey-based study is proposed to empirically validate the research model, using partial least squares structural equation modeling (PLS-SEM) techniques. In addition, we plan to conduct in-depth interviews with selected users to support results from PLS-SEM. The potential contribution of this study is to advance our understanding from a theoretical and practical perspective of why IS are infused by individuals in organisations.

Keywords: IT identity, IS infusion role identity, IS infusion.

1 Introduction

Organisations invest substantially in enterprise systems with the planned expectations that employees will utilise these technologies to enhance organisational efficiency, productivity, decision-making, innovation and collaboration. An under-utilisation of these systems by individuals often impedes organisations from gaining the expected benefits from their technology implementations (Saeed and Abdinnour-Helm, 2008; Venkatesh and Goyal, 2010). While different reasons may explain information systems (IS) implementation failures, a recurrent theme is that IS are rarely infused into individuals' work practices (Saga and Zmud, 1994). IS infusion refers to the individual's utilisation of the system to its fullest potential (Saga and Zmud, 1994). In other words, infusion represents the degree to which an individual proactively interacts with a wide range of specific features to conduct a certain task in a specific setting (Burton-Jones and Straub, 2006; Carter, 2012).

Thus far, much of IS infusion research has been done at the organisational level (e.g., Cooper and Zmud, 1990; Winston and Dologite, 1999). A selected few studies examined individual's IS infusion (Hsieh and Wang, 2007; Ng and Kim, 2009; Oakley and Palvia, 2012; Pongpatrachai et al., 2014). These studies evaluated the influence of technological factors (e.g., ease of use, usefulness, system self-efficacy, availability, portability, maturity), management and organisational factors (e.g., top management support, staff turnover, IS infrastructure, decentralization), task characteristics (e.g. task complexity, mobility, interdependence) and end-user related factors (e.g., attitude, intention, satisfaction) on IS infusion. However, research has not paid attention to an individual's unique characteristics (e.g., individual's identities) in relation to IS and professional roles that may shape infusion behaviours. According to Ortiz de Guinea and Markus (2009), psychological factors (e.g., individual's identity) have not been studied in the IS continuance use literature. These factors can drive continuing IS use directly rather than through behavioural intentions. Armitage and Conner (1999) stated that identity can be added to the behavioural model to improve and explain an individual's continuance behaviour. Recently, Leclercq-Vandelannoitte (2014) examined the coevolutionary process of identity and technology in IT assimilation. Based on these arguments, this study seeks empirical evidence to answer the research question: What is the impact of individual's IT identity and IS infusion role identity on IS infusion behaviour? The results can shed light on the factors that promote the use of IS to its fullest potential in organisations.

The rest of this paper is organised as follows: Section 2 outlines the theoretical background. Section 3 discusses the research model and hypotheses. Section 4 explains the research methodology. Finally, Section 5 presents the expected contributions of this study.

2 Theoretical Background

2.1 IS Infusion

A six-stage information technology (IT) implementation model, which incorporates infusion behaviours, includes initiation, adoption, adaptation, acceptance, routinisation, and finally infusion (Cooper and Zmud, 1990). The infusion stage occurs when “the IT application is used within the organisation to its fullest potential” (Cooper and Zmud, 1990, p. 125). Later, Saga and Zmud (1993, p. 110) further elaborated on infusion as “the extent to which an innovation’s features are used in a complete and sophisticated way” by individuals. These authors specified three dimensions of individual IS infusion as extended use, integrative use, and emergent use. Extended use refers to “using more of the technology’s features in order to accommodate a more comprehensive set of work tasks” (p. 80). Integrative use refers to “using the technology to establish or enhance flow linkages among a set of work tasks” (p. 80). Finally, emergent use refers to “using the technology in order to accomplish tasks that were not feasible or recognized prior to the application of the technology to the work system” (p. 80).

There are two streams of empirical research on IS infusion. One stream focuses on infusion via organisational technology configuration and investigates infusion in the form of a subsets of IT features (e.g., Intranet, commercial software packages) implemented in an organisation as a whole (Cooper and Zmud, 1990; Eder and Igarria, 2001; Lassila and Brancheau, 1999; Zmud and Apple, 1992). The second stream focuses on infusion via individual’s technology use and measures infusion by the degree to which IT users engage with the full range of features that the technology has to offer or the degree to which they employ the technology to its fullest extent (Hsieh and Wang, 2007; Jones et al., 2002; Ng and Kim, 2009; Saeed and Abdinnour, 2008). To unleash the challenge of individual IS underutilisation, this study plans to investigate IS infusion via individual’s technology use.

2.2 Identity Theories: IT Identity and Role Identity

Identity is a set of meanings that people apply to the self about who they are, how they interact as part of a group, the roles they perform, and in the standards, attributes and values they claim that separate them from other people (Freese and Burke, 1994). Previous studies find that identity is a primary motivator of behaviour (e.g., Carter, 2012; Stets and Biga, 2003; Theodorakis, 1994). Particularly, these studies argue that, in the case of long-term behaviours, identity, rather than attitude, is the primary motivator of individual’s behaviours. Identity researchers suggest that internalisation of identity have implications for individual’s behaviour (Riley and Burke, 1995; Stets and Burke, 2003). This line of argument has received strong empirical support across a number of studies that examine various behaviours in different demographic groups such as college student’s participation in campus social activities (Burke and Reitzes, 1981), blood donation (Charng et al., 1988), environmentally conscious behaviours (Stets and Biga, 2003; Terry et al., 1999), and technology usage (Carter, 2012; Leclercq-Vandelannoitte, 2014; Lee et al., 2006). Previous IS studies argue that identity is one of the core constructs explaining the evolution of individuals’ IS use behaviour (Carter, 2012; Leclercq-Vandelannoitte, 2014; Lee et al., 2006). These studies apply major identity theories from sociology - McCall and Simmons’s (1966, 1978) role identity theory, Burke and Stets (2009) person identity theory and Stryker’s (1968, 1980) identity theory. Our study extends identity theories to examine the influence of dimensions of an individual’s IT identity (relatedness, emotional attachment and dependence) and IS infusion role identity (self support, social support, commitment, resource investment, extrinsic gratifications and intrinsic gratification) on technology infusion behaviour.

Burke and Stets' (2009) person identity is based on the set of meanings that distinguish the individual as a unique person rather than an individual who holds a specific role or is a member of a group. Person identities are continuously activated and are mainly salient in the hierarchy of identities (Burke, 2004). Therefore, the meanings in the person identity would impact the meanings situated in individual's role and social identities more than the other way around (Burke and Stets, 2009).

McCall and Simmons' (1966, 1978) identity theory suggests that people assemble their multiple role identities in a "prominence" hierarchy that display the ideal self. The more positive an individual's affective response to an identity, the greater its importance, and the more likely an individual would act in accordance with the identity when situational factors make it advantageous to do so (McCall and Simmons, 1978). McCall and Simmons (1966, 1978) realised that the prominence hierarchy indicates the desired status or the stature of the self-concept.

2.2.1 IT Identity

From an IS perspective, individuals develop multiple identities through their interactions with various information systems, the range of roles they perform and the personal characteristics they claim. Individuals' relationships with the systems are significant to them because these relationships are a salient part of their self-concepts that are not shared with other people (Carter, 2012). As individuals continue to interact with a specific IS through a variety of attributes, roles and situations in an organisation, their interactions with these systems become essential to the sense of who they are as individuals. An IS implementation is a social scheme, including many performers with different attributes, goals, expectations, and values that make sense of IS through their feelings, emotions, attunement to the situation (Leclercq-Vandelannoitte, 2014). The sense of who they are in relation to IS is their IT identity. IT identity as individuals' person identity is based on the set of meanings, which distinguish the individual as a unique person. IT identity is conceptualised as "the set of meanings an individual attaches to the self in relation to information technology, as a product of individuals' history of interactions with an IT that shapes their ongoing IT use behaviours" (Carter, 2012, p.1).

Carter (2012) conceptualised the IT identity in the higher-order design with three interconnected components that express an individual's affective reaction to him/herself in relation to a specific IT. In the context of this study, these dimensions are defined as: (i) relatedness, that refers to "a blurring of boundaries between notions of the self and an IT experienced as feelings of connectedness with an IT" to perform tasks; (ii) emotional attachment, referring to "an individual's enduring feelings of enthusiasm in relation to an IT" in the daily routine use; and (iii) dependence, which represents "a person's reliance on an IT" as a source of competent role performing in the workplace (Carter, 2012, p. 188). Previous IS studies stated that when individuals see their interactions with a particular IT as fundamental to their sentiment of who they are, it would directly affect their long-term IS behaviours (Carter, 2012; Leclercq-Vandelannoitte, 2014). To investigate long-term IT use, it is requisite to assess the influence of the individual's identities in relation with the IT they use on a regular basis.

2.2.2 Role Identity and Role Identity Prominence

A role identity is an individual's imaginative view of her/himself as she/he tends to think of her/himself being and acting as an occupant of that position. The imagination of self indirectly depends on the performance of that role and an integral part of the imagination is the reactions of other people to an individual's hypothetical performance (McCall and Simmons, 1978). Identity theory's roots in symbolic interactionism suggest that an individual's self-concept is structured into a hierarchy of role identities. An individual's self-concept corresponds to their positions in the social structure, such as parent, exerciser, employee or IS infuser (Charng et al., 1988; McCall and Simmons, 1978). Identity theory can be used to examine how employees define their roles and the sense of self within the roles that they occupy within organisations (Reid, 1999). Workplace role identities are defined as "self-definitions based on occupying particular roles" (Farmer and Van Dyne, 2010, p. 503). The more

other people identify an individual with a specific role, the more the individual internalises the role and synthesises it into the self-concept.

Prominence hierarchical ordering of role identity introduced by Rosenberg (1979) presumes that individuals are introverted and aware of the identities that give rise to their relative ordering of importance and the self-structure. McCall and Simmons (1978) stated that “the essence of selfhood is the reflexivity of one's thought and action; one is able to evaluate, and to act toward, one's own person in essentially the same manner as does any other person” (p. 83). Individuals are conceived as idealistic about the self-perceptions of their role identities and the related behavioural characteristics. “This imaginative view of oneself in a position is usually rather idealized, incorporating standards of conduct and achievement that are unlikely to be consistently attained” (McCall and Simmons, 1978, p. 65).

The ideal self or prominence hierarchy is determined by six factors: self support, social support, commitment, resource investment, extrinsic gratifications and intrinsic gratifications (McCall and Simmons, 1978). A role identity's importance of influence on the ideal self is the outcome of the subjective weighting of each of these six determining factors. The weighting of these factors varies from individual to individual due to the subjective importance of each factor (Reid, 1999).

Self-support is defined as “the degree to which the person himself [herself] supports his [her] own imaginative view of his [her] qualities and performances as an occupant of the given position” (McCall and Simmons, 1978, p. 74). *Social support* is defined as the “degree to which one's view of self has been supported by relevant others [e.g., colleagues, bosses]” (p. 75). *Commitment* is defined as the “degree to which an individual has committed himself [herself] to the particular contents of [the] role identity” and has staked “his [her] regard for himself [herself] on living up to certain imaginations of self” (p. 75). Individuals' *investment of resources* (e.g., time, energy, money) is another influencing factor that shapes role identity prominence hierarchy based on the individual's attempts to create a specific role identity. *Extrinsic gratifications* include the material benefits obtained from performing a particular role. *Intrinsic gratifications* include self-pleasures gained by the enactment of a specific role identity. *Intrinsic gratifications* refer to “the sheer sense of efficacy in having done something with reasonable competence” (e.g., pleasure, satisfaction, pride) (p. 76).

3 Research Model and Hypotheses

Drawing on identity theories, this study proposes the research model as depicted in Figure 1. IT identity and IS infusion role identity are hypothesised as the antecedents of IS infusion behaviour that includes extended use, integrative use and emergent use.

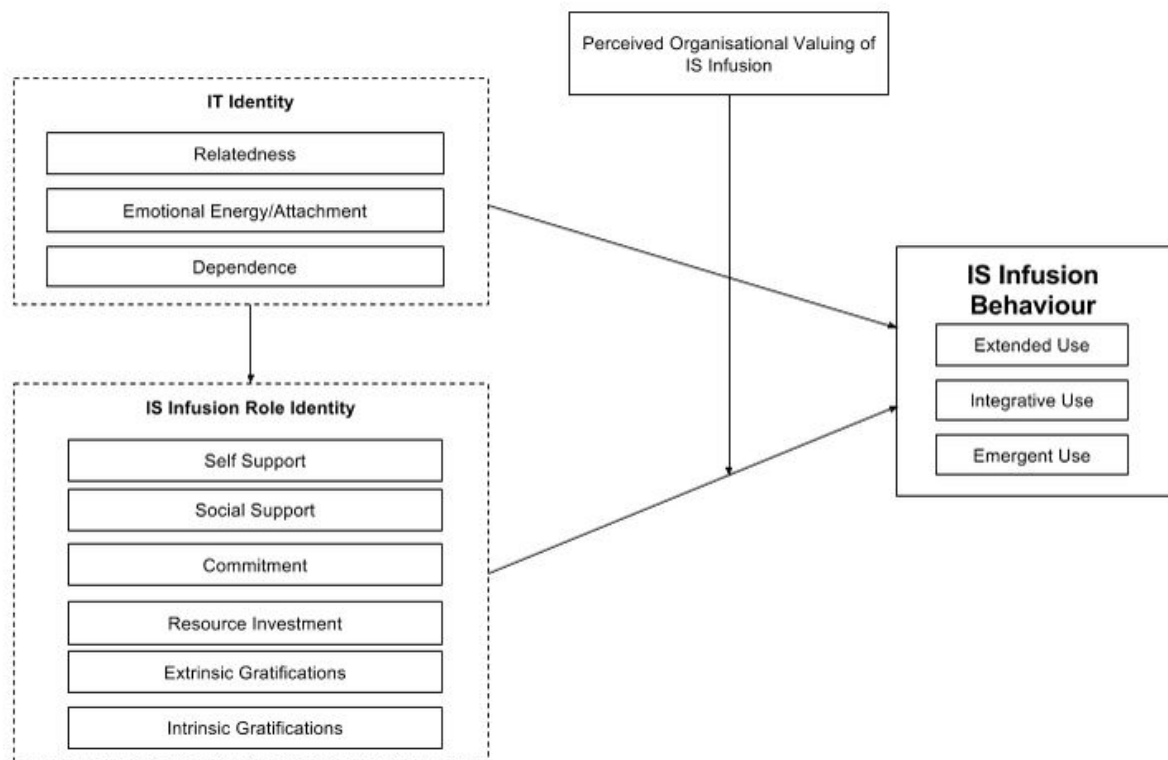


Figure 1. Conceptual Model of Study

IT Identity Hypothesis: McMillan and Morrison (2006) investigated Internet use and found that people report an increasing dependency on the Internet for personal well-being as its use pervades more aspects of their daily lives. Carter (2012) also found a strong relationship between the meanings individuals attached to the self in relation to mobile phones. The empirical evidence offers support that, for many individuals, mobile phone identity as IT identity is a salient part of their individual self-concepts that shapes their mobile phone use behaviour (Carter, 2012; Carter et al., 2012). By extending this argument into IS use in the workplace, we expect to see a positive relationship between IT identity and individual's IS infusion in an organisation. To elucidate conditions under which IT identity is a salient determinant of IS infusion, we test the influence of IT identity on IS infusion in the context of cloud CRM systems. In this case, IS infusion means that sales and marketing professionals who are the main users of CRM use most features of the systems. Because the goal of this research is to extend our understanding of the factors that promote IS infusion, we examine the influence of the dimensions of IT identity on different dimensions of IS infusion including extended use, integrative use and emergent use.

The focus of this study is on an individual level of IS infusion. Saga and Zmud's (1994) conceptualisation of extended, integrative, and emergent use behaviours is well established in the literature and seems appropriate for measuring individual-level infusion. This study examines three dimensions of IT identity including relatedness, emotional attachment and dependence. A user who has the feelings of connectedness with an IS (relatedness), higher enduring feelings of enthusiasm in relation to an IS (emotional attachment) and has a strong reliance on an IS as a source of performing tasks in the workplace (dependence) would engage and commit in using more of the system functionalities and features (extended use). Similarly, these individuals would better organise the related tasks and enhance coordination through IS use (integrative use) and would use the system in a more innovative and creative manner (emergent use) to accomplish tasks (Burton-Jones and Straub, 2006; Schwarz and Chin, 2007). Thus, we hypothesise:

Hypotheses: Individual's IT identity (relatedness, emotional attachment and dependence) will be positively associated with individual's IS infusion behaviour (extended use, integrative use and emergent use).

IS Infusion Role Identity: Individuals may be motivated to use an IS to support an important role identity if that system can support them to improve their role identity performance (Armitage and Conner, 1999). Farmer and Van Dyne (2010) found that psychologically prominent identities are related to relevant role performances; identity-related behaviours are most likely to happen in the workplace when identities (such as helping identity, industrious work identity) are psychologically fundamental and activating forces that make these identities prominent. An especially significant aspect of role identities is their psychological importance within the individual's overall self-concept and a role identity world range from low to high prominence to the individual (Stryker, 1980). Therefore, a prominent role identity would influence employees' behaviour in situations where they have free choice and can perform extra-role behaviours. In the case of this study, if employees view the role of IS infusion as the prominent aspect of their role identity, it will positively influence their IS infusion behaviour. Individuals' IS infusion role identity refers to the extent to which employees personally view that using the most features of a system or exploring the new features in innovative ways to accomplish multiple job tasks is an important part of their sense of self as an employee.

Farmer and colleagues (2003) reported that employees' *self support* and the co-worker expectations (e.g., supervisors, colleagues) about individuals' creative activities affects the creative role identity, which leads to the creative behaviours. In addition, an individual's self and *social supports* have a positive relationship with his/her continuance behaviour. On this basis, if a person in the workplace receives support from others and likes to use the technology in a deep and innovative manner for performing his/her role that represents the importance of his/her IS infusion role identity, this will impact on role identity prominence and influence his/her IS infusion behaviour. An individual's *commitment* to a specific role identity positively influences his/her identity-related behaviour (Reid, 1999). This argument received strong support from previous studies (Callero, 1985; Carter, 2012; Stets and Biga, 2003). Therefore, if a person is committed to IS infusion role identity, it will influence identity prominence hierarchy and impact his/her IS infusion behaviour. Previous studies (e.g., Limayem and Cheung, 2008; Venkatesh and Morris, 2000) suggest that the *resource investment* on IS usage along with frequency of use associated with an individual's time and energy investment influences his/her IS continuance use. In addition, extrinsic and intrinsic gratifications affect an individual's specific role identity performance (Reid, 1999). Therefore, we hypothesise:

Hypotheses: Individual's IS infusion role identity (self support, social support, commitment, investment, extrinsic gratifications and intrinsic gratifications) will be positively associated with individual's IS infusion behaviour (extended use, integrative use and emergent use).

IT Identity and IS Infusion Role Identity Relationship: It is important to recognise that IT identity as a person identity is part of an individual's multiple identities. Each of these identities is related to an aspect of the social structures in which that individual lives in. Individuals' person identity of deep attachment with IT use within the workplace affects their internalised expectations about competent performance in their work roles (McCall and Simmons, 1966; Stryker & Burke, 2000). For example, the moral person identity may entail meanings of being caring and helpful as individual's role identities. In turn, individuals may choose those roles that are consistent with their person identity meanings and they may be involved in groups that comprise these roles (Stets and Serpe, 2009). Carter and colleagues (2013) suggest that an individual's identity that is related to the specific IS becomes related to who they are in the roles they perform and the groups they associate with. Hence, individuals' person identity impact their workplace role identity. It leads to the following hypothesis:

Hypothesis: Individual's IT identity will be positively associated with individual's IS infusion role identity in an organisation.

Moderator Hypothesis: Role identity develops, in part, through social supports from others such as colleagues, supervisors, and top management in organisations. Further, maintenance of desired and valued identities is important in almost any workplace (Farmer et al., 2003). For example, Amabile (1988) argued that perceived valuing of creativity is a key component of an organisational environment that supports employees' innovative behaviours and it moderates the relationship between an employee's creative role identity and creative performance (Farmer et al., 2003). Applying this finding to the current study, we would expect employees' perceptions about their organisational valuing of IS use in deep and innovative ways (IS infusion) to validate their IS infusion role identities, which facilitate role consistent IS infusion behaviours in the workplace. In contrast, when employees with strong IS infusion role identity find themselves working under conditions where infusion behaviour is irrelevant or devalued, they will opt out of IS infusion engagement. In this manner, perceived organisational valuing of IS infusion strengthens the extent to which IS infusion role identity will result in IS infusion behaviour. It leads to the following hypothesis:

Hypothesis: Perceived organisational valuing of IS infusion positively moderates the relationship between an individual's IS infusion role identity and IS infusion behaviour.

4 Methodology

This study plans to use to collect data from IS users through a cross-sectional survey followed by interviews with selected users. All constructs in this study will be operationalised with multi-item scales adapted from validated instruments. These measures will be adjusted to fit with the cloud CRM context. A seven-point Likert scale will be used, with anchors ranging from strongly disagree (1) to strongly agree (7). Initially, a pilot study will be conducted to preliminarily examine instrument validity and reliability. In the next stage, the field survey will be administered to the users of cloud CRM systems in organisations. The psychometric properties of the measurement model will be assessed by examining reliability, convergent validity, and discriminant validity. We plan to use the partial least squares structural equation modelling (PLS-SEM) method for measurement model validation and structural model analysis. PLS is appropriate for exploratory research, which is the focus of this study. In addition, we will conduct interviews with selected users to support results from PLS-SEM.

5 Expected Contributions

This research offers both theoretical and practical contributions. Drawing on identity theories, this study provides an integrated theoretical model for understanding individual IS infusion behaviours in organisations. By linking IT identity and IS infusion role identity concepts to IS infusion, this study extends IS infusion research, which has not closely examined the effects of identity on IS use behaviours. In addition, this research builds on the work of Zmud and his colleagues (Cooper and Zmud, 1990; Saga and Zmud, 1994) by operationalising and testing the concept of IS infusion. In terms of practice, the results will provide managers with insights into factors that explain why infusion occurs (or fail to occur). The findings also provide managers with an understanding of factors that influence the full use of primary information systems for professionals in organisations. IS practitioners have a vested interest in ensuring that a system is used fully and appropriately within their organisations. Results from this study can be used to help organisations assess actual benefits from information system investments through system use. Findings may be used to provide guidelines for designing interventions to promote individuals' infusion behaviours and foster higher levels of infusion among users, ultimately helping organisations to secure full benefits from their technology investments.

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