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Developing new categories of knowledge acquisition, translation and dissemination by technological gatekeepers

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ABSTRACT

The role played by gatekeepers who acquire external technical knowledge, translate that knowledge so as to contextualise it for their companies needs and disseminate it to key organisational personnel is of increasing importance and value to firms. This study uses a single case study to extend the existing literature on technological gatekeepers through helping to fill two theoretical gaps. Firstly, by examining how gatekeepers operate in a new functional area: a technical hardware and software product support department. Secondly, by focusing on a site where corporate information systems and repositories were used to support gatekeeping activities. This focus on new organisational and systems contexts enabled the development of new categorisations within each phase of gatekeeping activity, resulting in a revised model of gatekeeper behaviour. Two new and distinct modes of knowledge acquisition were identified: reactive acquisition to solve immediate problems and proactive acquisition that was related to emerging technologies. Whether knowledge had been validated or was provisional was identified as a new concept to be considered during the acquisition phase. The systems focus enabled a number of new forms of knowledge translation and dissemination to be categorised. Rationalised translation involved clarifying and elaborating on translations held in the corporate repository while tiered translations enabled versions of translations to be electronically available to different levels of users. While interpersonal dissemination was present the increasing reliance on information systems for dissemination diminished the traditional need for gatekeepers to expended time and energy developing social networks.

1. Introduction

Technological gatekeepers have been described as one of the elementary agents of knowledge based development (Carrillo, Metaxiotis, & Yigitcanlar, 2010). The concept of a technological gatekeeper was initially developed to aid an understanding of an emergent (Whelan, Collings, & Donnellan, 2010) and informal (Sturges, 2001) role occupied by those few employees in research and development departments who acquired external knowledge on scientific developments (Allen & Cohen, 1969) and who acted as boundary spanners between external and internal environments when translating knowledge (Allan, 1977) so that it could be disseminated to appropriate colleagues in the firm (Tushman & Nadler, 1986). The literature reviewed in Section 2 considers how the concept of the gatekeeper was initially conceived, its development over time, as well as the types of research settings in which this literature was situated. It builds on recent work (Whelan, Donnellan, & Golden, 2009; Whelan, Collings, et al., 2010; Whelan, Teigland, Donnellan, & Golden, 2010; Whelan, Golden, & Donnellan, 2013) that examined how the gatekeeper role has changed due to new information and communication technologies, particularly when access to the internet has brought about the ability for all individuals to become gatekeepers within their specialised knowledge domain (Teigland & Wasko, 2003). Indeed Whelan, Collings, et al. (2010:401) argue that "*we still have a limited understanding of how the role and tasks of the gatekeeper are changing due to the ability of every professional in an R&D group to quickly and easily access external information through web-based channels*".

This research provides two important contributions to the literature on gatekeepers. Firstly it seeks to extend the gatekeeper concept to a new firm context; that of a product support department in a large multinational company. Secondly instead of focusing on external systems or internal e-mail as was previously the case a case study site was selected that enabled the role of corporate information systems on gatekeeping activity to be examined. This provides an opportunity to extend the existing literature

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by identifying new distinctions and categorisations within the traditional gatekeeper roles of knowledge acquisition, translation and dissemination.

2. The gatekeeper role

Developed by Allen and Cohen (1969) the technological gatekeeper concept was subject to initial research (Allan, 1977; Allen & Reilly, 1973; Katz, Tushman, & Allen, 1995; Nochur & Allen, 1992; Tushman & Katz, 1980; Tushman & Scanlan, 1981a) with the role then being re-examined due to developments in information and communication technologies (Whelan et al., 2009; Whelan, Collings, et al., 2010) and the digitisation of social networks (Allen, James, & Gamlen, 2007; Whelan et al., 2013). Research on gatekeepers focused both initially (Allen & Cohen, 1969; Tushman & Scanlan, 1981a) and more recently (Allen et al., 2007; Whelan, Collings, et al., 2010; Whelan et al., 2013) on research and development groups. Later studies expanded the concept, applying it to other contexts such as universities (Petruzzelli, 2008; Petruzzelli, Carbonara, & Rotolo, 2010) EU funded networks (Cassi, Corrocher, Malerba, & Vonortas, 2008), industrial districts (Albino, Garavelli, & Schiuma, 1999; Morrison, 2008), regional networks (Graff, 2011) as well as search engine companies (Vogl & Barrett, 2010) and medicine (Calrsen & Norheim, 2003; Shumsky & Pinker, 2003). While the notion of firms as gatekeepers or individuals within R&D departments acting as gatekeepers has been extensively examined little research has focused on other departments within the firm boundary. Given firms' increasing knowledge intensity across all functions this is a gap in the literature which this study seeks to address through its choice of a non-R&D department as one of its case selection criteria.

Gatekeepers act within a defined technical domain (Myers, 1983). Klobas and McGill (1995) argue that they can also be identified within professions as well as within organisations and industries. In addition they may also include front line employees, involved in service delivery and those having access to customer information should act as gatekeepers for crucial market information (Lievens & Moenaert, 2000). It was identified by Taylor (1986) that even in a dynamic research environment with organisational change the same people were continually identified as gatekeepers.

The initial benefits of gatekeepers included improvements in project performance for the organisation (Tushman & Katz, 1980) as well as improved promotional opportunities (Katz et al., 1995) for the gatekeeping individuals. In addition they help continuous innovation, enable reduction in lead times and improve production quality (Albino et al., 1999) as well as positively and directly affecting both quality and budget (Gemunden, Salomo, & Holzle, 2007). Their presence was found to be a characteristic of successful clusters by (Graff, 2011) with their presence generating positive externalities in their local area. The community with the strongest density of interactions was weakest regarding knowledge sources that locked it into a 'declining learning path' (Morrison & Rabellotti, 2009) showing the absence of gatekeepers was disadvantageous. Recently however, the degree of information availability and overload have given rise to new problems (Whelan et al., 2009). Traditionally the gatekeeping process was seen as a two-step one where the 'technological gatekeeper' firstly accessed external knowledge and secondly distributed it to R&D group members (Allen & Cohen, 1969) as outlined in Fig. 1.

It was later argued by Harada (2003) that because distinctive skills are required translate external knowledge then the flow of communication was better represented using three rather than two stages as shown in Fig. 2. Whelan, Collings, et al. (2010) found that it was very rare for an individual to be engaged in all stages of the gatekeeper role, concluding that the acquisition of knowledge

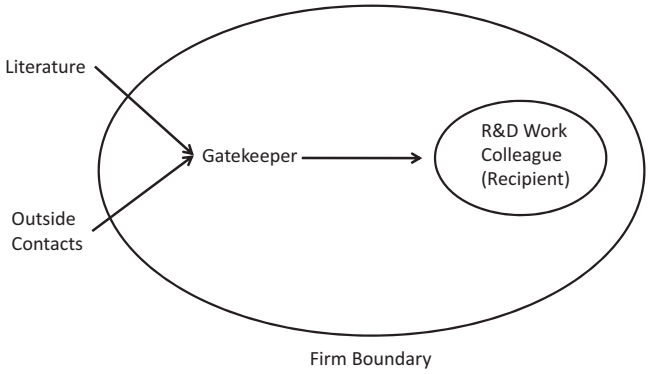

Fig. 1. Two stage gatekeeper model.
Adapted from Allan (1977).

was separate from its dissemination and identified specialisation of labour in the gatekeeping role. One type of gatekeeper, termed an external star', sought, identified, verified and acquired external information before then passing it on to an 'internal star' who then identified to whom in the organisation the information should be channelled. The next three sections outline the three identified phases of gatekeeper activity, acquisition, translation and dissemination in more detail.

2.1. Knowledge acquisition

Every research and development laboratory needs to import external information so as to keep abreast of the latest scientific and technological developments (Allen & Cohen, 1969) with gatekeepers enabling their fellow researchers to be kept aware of the 'broad world' of research (Sturges, 2001). It was argued by Brown and Utterback (1985) that to understand how the gatekeeper phenomena operates effectively requires an understanding of the conditions under which it arises; in particular an understanding of environmental uncertainty the more environmental uncertainty that exists the more likely it is for gatekeepers to be present, as there is a need for information to be externally acquired when there is a high rate of change in technologies. Therefore the pace of technological change in the information technology industry would make this an ideal research focus. Edler and Meyer-Krahmer (2001) found most common method of monitoring technology among large corporations was to have a core person responsible. One aspect of the gatekeeper role is to scan and search the external environment for technological and scientific developments identified as 'relevant' to the firm (Morrison, 2008; Whelan, Collings, et al., 2010). This may be because gatekeepers rate information channels consistently more highly than others (Weedman, 1992) as well as being found to have a genuine interest in emerging technologies within their specialty (Whelan, Collings, et al., 2010; Whelan, Teigland, et al., 2010). External stars 'verify' information for reliability before discussing it with others in the firm (Whelan, Collings, et al., 2010). In this context external, according to Lu (2007), has meant unfamiliar or unknown and not within the immediate reference of the individual. Gatekeepers may therefore influence organisational innovativeness based on the information that they allow to enter the firm (Emmitt, 2001). Searching and sharing with external sources, according to Morrison (2008), requires both parties to share some degree of similarity of background and be competent in the knowledge domain of their counterpart. They can thus provide a linking role by acting as boundary spanners between separate groups or networks (Tushman & Scanlan, 1981a,b) particularly where disparities exist between the internal and external environments 'coding schemes' (Tushman & Scanlan, 1981b).