

THE CASE FOR SLACK TO PROMOTE INNOVATIVE BEHAVIOUR IN CONSTRUCTION FIRMS

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The ability and willingness of individuals is a prerequisite to innovation. These traits are not unique to innovation in construction, but are universal amongst all innovative firms. Innovative behaviours depend on organisational resources and their deployment via managerial action. Organisational slack is forwarded as an enabler of innovation, as it makes a pool of unallocated resources available to connect ability to innovate and willingness to innovate. The authors posit that researchers and practitioners alike have failed to appreciate this enabler of innovative behaviour causing the principles of slack to be improperly overlooked. The case for slack resource allocation as a precursor to innovation is developed and the need to survey the attitudes towards slack organisational management held by construction organisations established. Institutionalism is identified as an analytical framework capable of explaining the interactions within the firm that differentiate between innovative and non-innovative construction organisations. A theoretical model of the role played by slack resource availability in stimulating innovative behaviours is developed for validation by a subsequent fieldwork programme.

Keywords: behaviour, innovation, organisational slack, organisational culture, resource management.

INTRODUCTION

The construction sector contributes significantly to the gross domestic product of most developed nations. The sector is characterised as being poor at innovating in comparison to other industries such as manufacturing and utilities providers (Thorpe *et al.* 2009). Despite innovation being central to organisational strategy and essential for organisational survival (Delbecq and Mills 1985; Hartmann 2006), the construction sector is further characterised by substantive barriers to the development of innovation. These barriers comprise individuals' attitudes and characteristics of the construction process, such as adversarial relationships and the cost of developing new technologies respectively (Blayse and Manley 2004).

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As a precursor to empirical study of the above, this paper develops and proposes a theoretical explanation of the organisational determinants of innovation, allowing the discrepancy between innovating and non-innovating construction firms to be explained. The behaviours of innovative construction firms are argued to be caused by the presence of universal elements of innovative firms per se that are not unique to the construction sector. It is reasoned that organisational slack allows firms to establish the universal elements of innovation. Alongside culture, a key universal element is the provision of the resources consumed by the innovative behaviour of individuals.

For the purpose of this study, a construction firm is an organisation with a distinct culture, with access to resources, and which generates profit by supplying a product or service to the construction sector. In the following discussion, construction firms include contractors, architects, manufacturers, suppliers, surveyors, engineers and consultants. Thorpe *et al.* (2009) characterise the global construction industry as being less able to improve its productivity than other industries such as the textile, steel and automotive sectors. They suggest that this is caused by a lower rate of innovation. The construction sector is also claimed to exhibit structural barriers to innovation, including: fragmentation; high technical risk; high cost; government regulation; adversarial relationships; strong client/end user influence and uncontrollable project contexts (Hardie and Newell 2011; Thorpe *et al.* 2009).

While the above influences on innovation in construction have been confirmed by Blayse and Manley (2004) and Hardie and Newell (2011), it is suggested that they exist independently of an organisation's or manager's sphere of influence. Consequentially, organisations have a limited control over their external environment. The ability of an individual firm to innovate is therefore dependent on its own capacity, rather than traits of its context. This is supported by the ongoing innovation of construction firms, despite the presence of sectorial barriers to innovation. Research into construction SMEs - historically stereotyped as unable to innovate - has revealed their ability produce multiple technical innovations (Thorpe *et al.* 2009; Barrett and Sexton 2006; Hardie and Newell 2011); an ability more traditionally associated with the larger construction firms (Davey *et al.* 2004) that do have the ability to influence their sectorial context.

The difference between innovative and non-innovative construction firms must therefore be caused by something other than their operating context: it must be a consequential of organisational characteristics. These will only be identified and understood if innovation is viewed from the perspective of the firm. This will shift the focus of investigation from interpreting the features of innovations or the context in which firms exist to studying the elements within firms that allow them to innovate. Adopting the perspective of the firm is anticipated to reveal innovative behaviours (referred to as willingness to innovate) within innovating construction firms that are absent in non-innovating firms. These behaviours are hypothesised to be supported by access to sufficient and appropriate resources (referred to as ability to innovate). Organisational slack is forwarded as a theoretical perspective on resource allocation within the firm that can explain the organisational traits that enable and reinforce innovative behaviours.

The following discussion uses the theory of organisational slack to explain anticipated differences between innovative and non-innovative construction organisations. Subsequent empirical fieldwork will test this application of slack theory by observing

the internal environment of innovative construction organisations from the perspective of actors within innovative and non-innovative constructions organisations.

A FIRM PERSPECTIVE OF INNOVATION

Confusion often arises when discussing "innovation" as it can be interpreted as a verb or a noun. In this discussion it is considered a noun, adopting Rogers' (1995) definition of an innovation as "an idea, application or a subject which is considered new by a person" (see Ekvall and Ryhammar 1998: 1393). Hartmann (2006: 156) states that "the implementation of new products, services and processes has become a critical challenge for construction firms." Although construction organisations are argued to operate amid 'unique' conditions, the wider management literature does not make innovation contingent upon any organisational traits that are unique to construction firms (c.f. Medina *et al.* 2005). Thompson (1967) argues that a field matures by developing patterned variation after the discovery of universal elements. The following discussion combines theories of innovation from management and construction literature to develop a holistic understanding of the universal elements of innovation within organisations per se.

Innovations are predominantly differentiated in research following two classifications. The first considers the nature of innovations themselves to distinguish their relation to existing products or processes. With this view, Radical and Incremental innovations comprise large and small advancements respectively (Damanpour and Wischnevsky 2006).

The second classification distinguishes innovations by their Administrative or Technical purpose. Administrative innovations occur within the administrative components of an organisation. They affect the organisation's social system by altering the relationships, rules and structures that frame organisation members' communication and interaction. Technical innovations, on the other hand, influence the organisation's technical systems by altering the equipment and methods that support product or service provision (Subramanian and Nilakanta 1996).

These classifications have not aided research into the act of innovation to any great extent, with empirical work yet to provide the evidence validating organisational innovation theories that are based upon the differences between innovation types (Damanpour and Wischnevsky 2006). For example, the Radical and Incremental classification only permits the post-rationalisation of innovations after their impact on technological advances has become known. The universal elements of innovative organisations that lead to innovative behaviours must therefore be identified by primary research rather than being extracted from prior classifications. They can be found by comparing innovative and non-innovative organisations.

Establishing the Universal Elements of Innovative Firms

Hartmann (2006) suggests that the presence, or otherwise, of an 'ability' (the resources available to facilitate innovation) to innovative and a 'willingness' (patterns of resource allocation decision making) to innovative are key differences between innovative and non-innovative firms. Innovation can consume vast amounts of money and time (see Gambatese and Hallowell 2011), requiring the 'ability' to consume appropriate resources. To ensure that activities related to innovation do not compete with routine organisation activities for those resources, the ability to consume a variety of resource types is essential (Delbecq and Mills 1985). These resources can be intangible (such as Hartmann's (2006) observation of intellectual effort) or tangible

(such as finance). Innovation also requires 'willingness' in the form of appropriate culture and behaviour: a key component of which is the willingness to apply resources to activities related to innovation.

Delbecq and Mills (1985), Egbu *et al.* (1998) and Hartmann (2006) each find distinct behaviours and attitudes in innovative organisations that are missing in non-innovative organisations. Hartman (2006: 162) summarises them as follows:

1. Innovation is encouraged.
2. The status quo is challenged.
3. Focus on long term issues.
4. Risks are accepted as inevitable and tolerated.
5. Failure is accepted and represents learning.
6. Members have autonomy to act, and are encouraged to be creative.
7. Information is shared between all levels and units.
8. People are seen as valuable capital.

Without these cultural traits, non-innovative organisations become entrenched in their norms and risk avoidance behaviours (Delbecq and Mills 1985; Egbu *et al.* 1998). Hartmann (2006) suggests these non-innovative behaviours can be overcome by managerial action including: autonomy; pay raises; fringe benefits; workshops; training and job enrichment or enlargement. Hence, the nurturing of an innovative culture within an organisation itself requires further resource consumption.

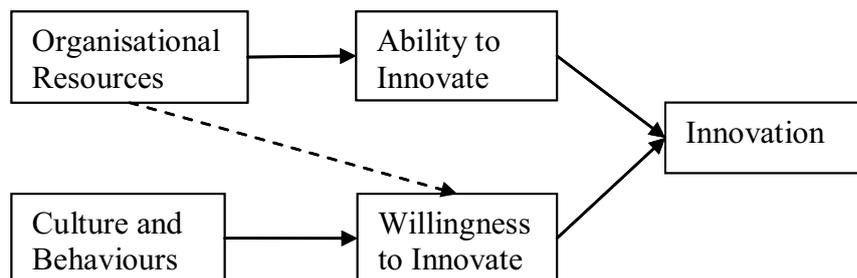


Figure 7 - The importance of organisational resources to the development of innovations

The concept that willingness to innovate is underpinned by ability to innovate (Figure 1) is evident in Hartmann's innovative behaviours. For the risk and possibility of failure to be acceptable, organisations require sufficient resources to tolerate the possible loss, most likely in terms of additional finances. The concept of excess, available resources can be further expanded to include autonomy and information sharing, both of which required time resources to be exploited.

It may be the case that the pivotal importance of access to resources is not recognised by practitioners. When surveying influences on innovation, Hardie and Newell (2011) found that construction SMEs consider resources a less important enabler of innovation than other external issues such as government regulation, industrial and client relationships. The practitioners were less aware of the importance of their own ability (i.e. access to resources) and willingness (i.e. desire to consume available resources) to innovate. This is a critical misunderstanding. With resources enabling innovation and enabling the promotion and reward of innovative behaviours within an organisation, it is clear that their effective deployment and influence over innovation is misunderstood.

SLACK IN CONSTRUCTION ORGANISATIONS

Organisational slack is forwarded as a theory capable of linking the ability and willingness to innovate with innovation. Slack theory addresses the allocation of resources within an organisation and can direct the nurturing of an innovation-conducive culture by establishing enabling and motivating factors that allow the cost and risk of innovation to be tolerated.

Having argued that construction organisations are not unique from the perspective of innovation, the same is held for organisational slack as all firms, irrespective of sector, have resources available to them and have the ability to generate and deploy additional resources. There is, however, a disparity between the development of slack as a theory in relation to innovation generally and its adoption in the field of construction research. There is a paucity of literature explicitly discussing the concept in a construction context. Nam and Tatum (1997) and Barrett and Sexton (2006) both refer to 'slack' but do so without exploring the implications of slack resources for construction organisation management. To inform that management, the relationship between slack and innovation must be understood in greater detail.

Defining 'slack'

Cyert and March (1963) first defined 'slack' to characterise payments to the members of a coalition in excess of the resources required by that organisation to operate. These payments included dividends, excess income and prestige. Over the past 50 years the concept of slack has expanded beyond the payment of actors. Initially exclusively related to financial resources (Bourgeois 1981; Bourgeois and Singh, 1983), theories of slack have since expanded to include more diverse resources such as raw materials, labour and production capacity (Sharfman *et al.* 1988). More recent treatments also consider intangible resources (such as knowledge) to be components of slack (Renzi and Simone 2011). As later developments have depreciated a purely financial interpretation of slack resources, Nohria and Gulati's (1997) definition is adopted, viz.:

“The pool of resources in an organisation that is in excess of the minimum necessary to produce a given level of organisational output” (1997: 604)

Not all resources are the same: the consumption of different types of resource cause different effects within an organisation. Researchers have attempted to categorise slack resources according to: the ease by which slack can revert to cash (Bourgeois and Singh 1983); their level of absorption into the organisational system (Singh 1983); the level of discretion with which they are allocated (Sharfman *et al.* 1988); and their 'stickiness' (Mishina *et al.* 2004). Discretion refers to the ability of a resource to be converted into another use, should the need arise. Cash is seen as highly discretionary because it can be readily converted for use in a variety of situations (Sharfman *et al.* 1998). The stickiness of a resource is a more complex issue, relating to both the divisibility and fungibility. Divisibility refers to the ability to vary the amount of resource allocated in response to demand. Fungibility is the ability of a resource to be used in a variety of situations: a specialist engineer, with fixed long employment hours would be an example of a 'sticky resource' (Mishina *et al.* 2004).

THE ROLE OF SLACK IN RELATION TO INNOVATION

Due to the diversity of innovation, a variety of excess resources might be required including but not limited to financial, human and time resources. Although Gambatese and Hallowell (2010) have established that the Technical innovations of construction firms consume significant time and financial resources, the need to also consume human (and other intangible) resources is yet to be widely recognised. Administrative innovations are also likely to place similar demands on both tangible and intangible resources.

Application of slack

Slack can promote innovative behaviours by providing the ability of individuals to innovate within an organisation. The resources that it makes available within an organisation can be used for several functions. Those commonly discussed in slack literature are presented below:

Risk taking

Slack organisations are able to experiment with strategies or technologies and can accommodate the risk associated with such activities. Additional slack resources allow risk, and possible failure, to be tolerated (Bourgeois 1981). Without such a cushion, investment in any unsuccessful project could be extremely damaging.

Inducement

Slack provides organisations with the ability to nurture an organisational culture in which behaviours are condoned (Bourgeois 1981) by, for example, challenging current ideas and encouraging innovation. Organisational decision makers can use slack financial resources to reward and reinforce desired practices or behaviours through incentive payments. Many of the managerial actions in Hartmann (2006) are closely associated with inducement: pay rises, fringe benefits, pleasant working conditions, workshops, excursions and open work spaces are all examples of inducement through managerial action.

Technical buffer

A vital function of slack is its ability to act as a technical buffer. Technical buffering was first considered to be applied in order to protect an organisation from fluctuations in demand for its goods and/or services and supply in the resources consumed in their production (Bourgeois 1981). When available within an organisation and not required by this application, the technical buffer grants individuals free time to engage in experimentation (Nohira and Gulati 1997).

Sharfman *et al.* (1988) extended this conceptualisation of slack by differentiating slack from other buffers, as they believed that technical buffers operate differently. They argued that, although both buffers and slack can alleviate external fluctuations, slack also lessens internal fluctuations by mitigating the conflict that would otherwise arise when tension between existing processes and those required by a changed external environment becomes untenable. Furthermore, buffers are employed in situations of high resource dependency (where resources are available from one or few sources), whereas slack is more appropriate to the resolution of conflicting demands.

Bourgeois (1981) argues that, when slack is applied within an organisation, it allows individuals time to engage in innovative activities that might otherwise be impractical. If an individual were required to allocate all of their time to organisational responsibilities, for example, they would not be able to engage in activities associated with innovation. By granting workers an element of spare capacity, slack facilitates

the autonomy that can lead to innovation. This requirement for independence is recognised by 3M, where individuals are permitted to allocate 15% of their time to the pursuit of innovative concepts (Brand 1998). When coupled with appropriate behaviours established by inducements and risk tolerance, autonomy becomes a driving force behind the ability to innovate.

Conflict resolution

Slack minimises the conflict in conditions where incompatible operational goals are forced to compete for finite organisational resources (Nohria and Gulati 1997). Additional resources provide competing goals sufficient resources to generate a solution. Competition and resulting conflict can reduce the information sharing and co-operation within the organisation that is vital to innovation.

Summary

It seen from the above that slack enables a variety of functions within an organisation that, in turn, enable or motivate individuals' ability and willingness to innovate. Communication and knowledge transfer has been linked to conflict resolution, risk acceptance. Tolerance is provided through a cushion of excess resources. Autonomy is provided through technical buffering from both internal and external fluctuation. Finally, innovative behaviours are seen to be motivated through inducement.

To instil organisational slack as a precursor to the universal elements of innovation, the ability and willingness to innovate, it is essential to understand how firms operate and understand the interactions that occur within them by selecting a suitable theory of the firm.

For slack to be effective in stimulating innovation, it must be infused into an organisation in a manner compatible with an understanding of how that firm operates. This requires the diffusion of slack principles and resources to reflect an appropriate theory of the firm.

THEORY OF THE FIRM

The complexity and diversity of firms permits their analysis in a variety of ways (Penrose 1995). To approach innovation from an organisational perspective, it is necessary to adopt an appropriate theory of the firm. In this context, an appropriate theory must accommodate a variety of factors associated with innovation and organisational slack.

The selection of an explanatory theory of the firm requires the field of study to be re-established. Although the preceding discussion considers the influence of resource availability within the firm on the behaviours of individuals in terms of slack, this is not the intended field of study. The intention of this paper is to argue that innovative construction organisations are not dissimilar to other innovative organisations, and that there are universal elements or similarities between them. Therefore both a resource and behavioural theory of the firm (Pitelis 2007) cannot be used to establish a basis for the study.

Institutionalism is forwarded as a theory of the firm which offers an analytical lens capable of explaining the phenomenon of isomorphism (i.e. similarity) of firms. This would allow the salient, differentiating features of innovative construction organisations to be established by comparing their willingness to innovate and the presence of organisational slack with those of non-innovating construction organisations.

According to institutional theorists, behaviours are the product of "ideas, values and beliefs that originate in the institutional context" (Greenwood and Hinings 1996). This position compliments Hartmann's (2006) model of innovation, in which innovative behaviours are perpetuated by the values of the organisation. As isomorphism is the process by which organisations copy each other through mimetic process (Greenwood and Hinings 1996), it is argued that firms develop and embed slack within their organisational culture in order to nurture the innovative behaviours that drive innovation.

Selznick (1996) contends that the culture of an organisation is mediated social construction and therefore depends on actors' perception and evaluation. Immergut (1998) extends this view by considering the role of institutionalism in permitting critique of the behaviour of individuals within the firm. Behaviouralists argue that an individual's 'true' preferences cannot be ascertained but must be revealed by observing their behaviour. By contrast, institutionalists recognise the potential for discrepancy between an individual's expressed preferences and their 'real' preferences (Immergut 1998) when the individual must reconcile the immediacy and political constraints of their situation with the full potential of the slack resources available to them. This discrepancy is important as it can explain why organisations claim to optimise resource consumption (as their expressed preferences) and therefore exclude preference from resource consumption, yet remain able to innovate as slack resources remain present due to their real preferences. It is therefore proposed that innovative construction firms will contain slack as a manifestation of a stated preference to be 'innovative.' Moreover, their operating culture will embody values that enable slack resources to have consequence by validating and endorsing individuals' decisions to consume such resources to support innovative behaviours. Hence, innovative construction organisations will also exhibit the innovative behaviours discussed by Egbu *et al.* (1998) to a greater extent than non-innovative organisations.

CONCLUSION

This paper characterised the universal elements that underpin a theory of innovation from an organisational perspective. The ability and willingness of organisations to innovate are seen to provide these universal elements, with the availability of organisational resources facilitating their translation into innovative behaviours.

Organisational slack has been forwarded as the theory that could explain this application of 'excess' resources by innovative construction firms to generate innovative behaviours.

From a theoretical perspective institutionalism has explained the presence of slack and innovative behaviours as universal element of innovative firms, this confirming the presented hypothesis. The perception of slack and associated innovative behaviours will be observed by subsequent fieldwork to validate this preliminary synthesis.

In the course of developing the above theoretical framework, several research questions have emerged as the subject of subsequent study. These are:

1. Do those organisations characterised as being innovative by their constituent members exhibit the universal elements associated with slack?
2. What informs organisational members' understanding of their ability to innovate?
3. What informs organisational members' understanding of their willingness to innovate?

4. How do organisational members identify situations in which the consumption of slack resources is appropriate?

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