

Benefits and Drawbacks of Innovation and Imitation

Organizations seeking competitive advantage often rely on a combination of innovation and imitation to improve their capabilities and performance. Differences in proportions of innovation and imitation used in industry, as well as the type of imitation, can have organizational and industry implications that have not been adequately addressed. This paper aims to capture the characteristics associated with independent innovation, social-based imitation, and skill-based imitation within industries in order to more clearly portray the effects on organizations and industries over time. Based on assumptions from the resource-based view and the awareness, motivation, capability perspective, the analysis identifies differences in the type and variance of innovations that spread throughout different types of industries.

Key words: *Innovation, Imitation, Competitive Advantage, Resource-Based View, Deductive Reasoning*

INTRODUCTION

Should firms try to be similar to or different from competitors? There are valid reasons for both objectives. Being similar has the potential to provide legitimacy and prevent a competitive disadvantage, while being different can establish a competitive advantage and signal leadership. Deephouse's (1999) work on a theory of strategic balance concluded that competing organizations "should be as different as possible" (Deephouse, 1999: 147). Organizations can seek similarity and differentiation through acts of innovation and imitation with varying results. An innovation is defined here as a new product, process or service (or portion thereof) (e.g. von Hippel, 1988), and refers to the commonly accepted perspective that an innovation is more than just the discovery or creation of a potential source of profit, it includes acting on it in a way that promotes its use (e.g. commercialization) (Schumpeter, 1950). This paper examines the effects of innovation and imitation attempts on organizations and industries through an evolutionary lens to identify the benefits and drawbacks of innovation and imitation. The examination relies on assumptions drawn from the resource-based view (RBV) of the firm

(Barney, 1991; Wernerfelt, 1984) and the awareness, motivation, capability (AMC) perspective (Chen, Su, and Tsai, 2007). There is sufficient overlap between the RBV and the AMC to provide complementary assumptions which enable outcomes of innovation and imitation to be deduced.

The acquisition, creation, use, modification, and elimination of resources over time involve some degree of evolution that can vary by firm (Nelson and Winter, 1982). This evolution is often thought to lead to idiosyncratic outcomes that increase the differences between firms. That is, even if firms acquire resources similar to their competitors they will integrate them differently with other resources and with distinctive activities which result in diverse firms. This diversity can be advantageous in that it provides the potential for gaining a competitive advantage if a firm is different in valuable ways (Barney, 1991). For example, if a firm has developed more efficient and effective interactions among its human and technological resources it may be able to implement a more valuable differentiation strategy or achieve a lower cost structure than its competitors. Diversity can also be disadvantageous for firms, not only because they could be at a competitive disadvantage because they are less effective, but because they may not be considered legitimate. Firms that lack legitimacy face difficulty in building important relationships (e.g. suppliers and customers) (Zimmerman and Zeitz, 2002). Thus, it is crucial for firms to identify ways to be both different from and similar to competitors.

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The particular ways in which firms should be similar to or different from their competitors is partly dependent on a variety of factors that are outside the scope of this research. For example, elements of the external environment such as the five industry forces (Porter, 1980) can often direct firms toward particular actions. This research, instead, focuses on how firms might choose to become similar to or different from competitors by engaging in innovation and imitation in ways that can lead to gaining legitimacy and economic efficiencies leading to competitive advantage.

THEORY

This paper makes several assumptions that are relevant to the innovation versus imitation context. The assumptions are drawn from the RBV and the AMC because of their focus on competitive dynamics under which the innovation and imitation evaluation is closely linked. The RBV states that organizations' actions and performances will be significantly influenced by how valuable, rare, inimitable and non-substitutable their resources are that they possess or control (Barney, 1991). The AMC claims that the degree of awareness, motivation, and capability that an organization has influences its actions (Chen, et al., 2007). For reasons of parsimony, the number of assumptions used was limited to only the most critical to the analysis. These assumptions are then applied to a set of competitors to portray likely outcomes pertaining to competitor similarity over time. The set of competitors that are pertinent to this examination are those organizations that are perceived as similar in identity and, to some extent, resource composition (Dobrev, Ozdemir, and Teo, 2006). These features enable the competitors to be aware of one another, be motivated to act based on one another's actions, and be generally capable of engaging in similar actions (Chen, et al., 2007).

The first assumption is that initial competitors in a newly forming industry are, by default, typically innovative because there is little to imitate. This assumption is derived from both the RBV and the AMC. The RBV states that an organization will create or imitate resources and capabilities in order to engage in new activities. Since a newly forming industry does not yet

provide anything to imitate, organizations are left to engage in creation activities. The AMC adds to this logic by stating that there is motivation for organizations to seek out or create new industries in order to capture additional profits, such as those associated with first-mover advantages (Lieberman and Montgomery, 1988). These organizations may also have awareness of or access to new or different information, such as through knowledge spillovers (Bae, Wezel, and Koo, 2011), or they believe they can succeed where others might not be able to (Greve, 1998). Thus, any organization that is capable of helping form a new industry is relying on their innovation capabilities. Success with innovation motivates an organization to continue innovating, although this can sometimes result in dysfunctional persistence (Audia, Locke, and Smith, 2000). A culture of innovation is developed and strengthened which leads to continued reliance on innovation over time (Jassawalla and Sashittal, 2002). The persistence of innovation is also influenced by particular innovation strategies that organizations use to develop new products and processes (Clausen et al., 2012), in part, because of the habitual nature of these processes that develops over time (Ashmos, Duchon, and McDaniel, 1998).

The second assumption also stems primarily from the organizational capabilities element of the RBV and the AMC. It is that some organizations are more capable innovators than their competitors. These organizations can innovate more quickly or more effectively because of differences in individual and organizational factors (Glynn, 1996) such as resources (Penrose, 1959), organizational structure, and organizational culture. Altering these elements over time can help organizations become faster and more skilled at innovation and imitation (Kale and Little, 2007). The motivation to continue innovating exists even in the face of competitors' prodigious imitation attempts because an organization can capture first mover advantages (Moorthy, 1988) or a portion of any increase in customer demand that stems from the cost reductions or product enhancements provided by the innovation (Shrieves, 1978). In sum, it takes predictive capability, via awareness and motivation, along with implementation capability to realize



successful innovation outcomes (Jalonen and Lönnqvist, 2011).

The third assumption is that the innovation process can be sped up for competitiveness purposes. This assumption is part of the capability and motivation elements of the RBV and AMC. Competition motivates organizations (Kamien and Schwartz, 1972). Organizations performing sufficiently well will not perceive a need to change (March and Simon, 1958). However, if competitors start performing significantly better the organization may attempt to speed up its innovation processes in order to catch or surpass its competitors (Ferrier, Smith and Grimm, 1999). Learning can speed up this process as it creates new modes of operating (Young, 2009). Of course, learning outcomes vary among organizations, and this could affect the success of speeding up innovative efforts (Le Mens, Hannan, and Pólos, 2011).



The fourth assumption is that an organization must be aware of a competitor's innovation before the organization can imitate it. This assumption comes directly from the awareness element of the AMC. Generally, this type of awareness involves recognizing that a competitor is using the innovation (Greve, 1998) and that the innovation appears superior, or that the innovation will provide legitimacy (Friedland and Alford, 1991). There are a variety of reasons why superior innovations may go unnoticed or be ambiguous enough to reduce the degree of awareness an organization will have about the innovation. For instance, the innovation may be based on tacit knowledge that the organization cannot see or understand (Nelson and Winter, 1982), or its role in the

overall success of the competitor using it may be unclear (i.e. linkage ambiguity (King and Zeithaml, 2001)).

The fifth assumption is that competitor imitation involves a lag period. This assumption is implicitly part of the AMC in that awareness is necessary, but most awareness requires seeing or hearing about something that has already happened. When imitating, an organization must first see the innovation to imitate. Thus, an organization is already engaging in the innovation before a competitor can see and start engaging in the same innovation. This lag time can vary depending on how difficult the innovation is to imitate or how significant are the time-compression diseconomies that impede capability generation (Dierickx and Cool, 1989). One factor that influences this difficulty is the degree of tacitness of the innovation, which increases ambiguity of the innovation. In addition to having to see the innovation before imitating it, an organization may also wait until sunk costs are recouped or until an innovation is sufficiently improved to make imitation worthwhile (Brozen, 1951). Furthermore, the change process associated with an imitation effort is often nonlinear and involves delays from reversals of actions (Greenwood and Hinings, 1988). The analysis here uses a one period lag rate (some researchers have even used instantaneous imitation (e.g. Grahovac and Miller, 2009), however it is readily apparent that the above factors along with the differences in learning processes of organizations can create variance in imitation rates (Bingham and Davis, 2012). Integrating these differences would increase the complexity of the analysis, and perhaps obscure some of the outcomes.

The sixth assumption is that organizations know what they are planning on doing in the next period and their competitors will not find this out until the organization engages in the innovation (although some can speculate about the future actions of competitors (Kamien and Schwartz, 1972) and sometimes announcements about forthcoming innovations are made by innovators (Gerlach, 2004)). This assumption is closely associated to the immediately prior one. Thus, organizations who may be deciding how fast to innovate or who or whether to imitate will compare their future plans for the next period with the current innovations their competitors are engaging in during the current period.



The seventh assumption is that organizations require motivation to change. This assumption comes explicitly from the AMC, but is also implicitly part of the RBV. The idea is that organizations continually try to improve their performance. However, it is costly and risky to change, and these costs and risks vary by industry (Mansfield, 1961). In addition, aspiration levels of organizations influence the desire to engage in change behaviors (Miller and Chen, 2004), and these vary depending on factors such as past organizational and industry performance (Washburn and Bromiley, 2012). In this context, organizations will not innovate differently or imitate a competitor unless there is a benefit to doing so (Grahovac and Miller, 2009). Benefits, in this case, include increased legitimacy and economic efficiency, both of which are sought by organizations (Yang, Su and Fam, 2012). In the case of legitimacy, if other competitors are engaging in an innovation the organization can gain legitimacy by imitating the innovation. Motivation to imitate can also increase when the potential imitator sees the success of the innovator and how the innovation actually works (Schumpeter, 1961).

The above seven assumptions enable us to explore how a set of competitors might evolve within a new industry. In particular, we can identify how much variation in competitor practices there is likely to be over time when competitors are focused on either innovation or imitation. It is somewhat of an artificial delineation between innovation and imitation in that some of the ideas used in innovation may actually come from seeing what other

organizations are doing. A focal organization's innovation may take into account existing models of others and identifying ways to improve them (Kang and Yanadori, 2011). Thus, although this article separates innovation and imitation, it acknowledges that the distinction is not clear cut and that there is likely a continuum between the two approaches.

The results of combining the seven assumptions, using a deductive approach, are shown in Table 1. Table 1 illustrates the differences in the types of behaviors that evolve in an industry depending on whether innovation or imitation is primarily relied upon for important organizational behaviors. For each innovation/imitation type there are six competitors. The first two competitors, labeled 1 and 2, start out with new innovations in a new industry. The remainder of the competitors, labeled 3, 4, 5 and 6, engage in innovation or imitation as indicated by each subheading. The specific version of each type of innovation is labeled with a lowercase or uppercase letter(s). Lowercase letters represent an introductory version of the innovation, which is initially effective but may be able to be developed further. The uppercase letters represent more advanced versions of the innovation. These advanced versions are more effective than the introductory versions and they also can be further developed into more advanced and effective versions as denoted by multiple capital letters (the larger the number of letters the more advanced and effective is the innovation, i.e. three letters is better than two).



Table 1: Growth and Diffusion of Innovation and Imitation							
<i>Independent Innovation</i>							
	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7
Competitor 1	a	A	A	A	AA	AA	AAA
Competitor 2	b	B	b	B	B	B	BB
Competitor 3		C	c	C	C	CC	CC
Competitor 4		D	d	d	D	D	D
Competitor 5			e	e	E	E	EE
Competitor 6			f	f	FAIL		
<i>Social-based Imitation</i>							
	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7
Competitor 1	a	A	A	A	AA	AA	AAA
Competitor 2	b	B	b	B	B	B	BB
Competitor 3		a	a	A	A	AA	AA
Competitor 4		b	b	b	B	B	B
Competitor 5			a	A	A	AA	AA
Competitor 6			b	b	FAIL		
<i>Skilled-based Imitation</i>							
	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7
Competitor 1	a	a	A	A	AA	AA	AAA
Competitor 2	b	b	b	B	B	AA	AA
Competitor 3		a	a	A	A	AA	AA
Competitor 4		B	b	A	A	AA	AA
Competitor 5			a	A	A	AA	AA
Competitor 6			b	A	A	AA	AA
Note: Each letter represents a different form of a particular behavior. Lower case letters represent initial low-skill forms of the innovation and capital letters represent high-skill forms of the innovation. Multiple letters represent increasing skill levels of the innovation.							

Below, there are three types of origins for competitor behaviors discussed and shown in Table 1. These types include independent innovation, social-based imitation, and skill-based imitation. These three origins are consistent with the RBV. The discussion for each of these three types will focus on their evolution over time. There are seven time periods used in Table 1. Each time period represents a length of time that is sufficient for an organization to engage in an innovation and for its competitors to see it and prepare for its imitation the next time period when desired. The Table is designed to be a general assessment. It is not tied to or limited to any specific industries, although additional assumptions could be added to examine the likely effects of any particular industry.

Independent Innovation

Based on combining the above seven assumptions, it can be deduced that a new

industry that contains competitors who rely on independent innovation will have much more variation in both innovation type and skill over time as compared to industries with competitors who rely primarily on imitation of competitors. In industries where independent innovation is relied on, new competitors develop their own versions of an innovation as they enter the industry. The organizational systems and structure that these competitors introduce will have a significant ongoing impact on innovation (Jain and Swarup, 2012). Because of their newness to the innovations, competitors are not yet skilled at the necessary behavior but over time are usually capable of further developing the innovation to increase its economic effectiveness. This effect is shown for Competitors 1 through 5 and is indicated by the lowercase letter turning into a capital letter in a later time period.

Since some competitors start earlier than others, and some are faster at improving their innovations, there is a disparity of innovation



levels among competitors that grows over time. This is indicated in time period seven where Competitor 1 has a better innovation (AAA) than any other competitor. The effect of differences in learning and innovation ability can be seen in comparing Competitors 1, 3 and 5 against Competitors 2 and 6. Competitors 1, 3, and 5 are capable of improving their innovations every second time period while Competitors 2 and 4 require three time periods to improve their innovations. This difference enables some later entrants to catch up or surpass some earlier entrants. Potentially, some innovations can continue to be improved for a very long time and this disparity could increase. With other innovations, there may be inherent limitations on how improved an innovation can be and this would, in the long run, mean that competitors who are initially behind would potentially catch up with the industry leaders (assuming they are capable of learning).

Every competitor might not create an initial version of an innovation that is feasible in an economic sense. Competitors are sometimes compelled to substitute different resources in an effort to establish a productive innovation (Mitchell, 1989) and this can result in more or less effective innovations (Adner and Zemsky, 2006). Thus, as indicated by Competitor 6's failure in time period 5, some competitors will not last long enough to enhance their innovation and they will be driven out of business. A similar demise can occur for competitors who may initially create a competitive version of an innovation but are then unable to learn sufficiently and are subsequently unable to make appropriate improvements in their innovation.

The evolution of an industry characterized by independent innovation is likely to be influenced by a high degree of dynamism. Organizations will continually try to improve their innovations in order to gain or maintain a competitive advantage. In one sense there is a great need for the introduction of new knowledge into the organization so that it can remain on the cutting edge. According to the RBV's concept of idiosyncratic resources, much of this new knowledge is likely to create variance among competitors as they work to integrate it into their organization's innovative efforts. Some of the new knowledge may be tacit, in part, because it arises from an organization's own activities and development efforts. This new tacit knowledge

is likely to be of more use to the focal organization because it is based on the organization's particular combination of its internal environment and the external environment (Nelson and Winter, 1982). Other organizations will be less able to understand it and it will be less valuable to them because their internal environment is different.

In the same environment, similarities may emerge over time because improvements are made to enhance performance and to the extent that performance is determined (selected) by environmental conditions, there will be a greater chance of similarity (although equifinality can exist). Population ecology literature suggests that the environment may increase similarity because it has a strong influence over firms' characteristics by weeding out those firms that are unable to meet the environmental requirements (due to an insufficient ability to change at the same rate the environment changes) (Hannan and Freeman, 1977).

Organizations in an independent innovation industry can focus on a more internally consistent integration with existing resources, capabilities and strategies. They are not guided by or limited to other organizations' actions. Thus, these organizations can be the best or the worst depending on the efficacy of their innovative efforts. These organizations have more choice as to their strategic direction, although they may be selected out if they make very poor choices. Developing its own innovations does not mean that an organization will be better than or different from its competitors. Similar environments can create similar organizations although some differences are likely to exist. Organizations that focus on being the best they can be without considering the imitation of competitors' innovations that may be better than their own are likely to miss out on some opportunities to achieve parity rather than be at a disadvantage.

There are often risks and extra costs to innovation as compared to imitation. These are referred to as pioneering costs, and they stem from mistakes that are incurred by an innovator when new outcomes are pursued. Imitators can avoid many of these costs. Innovators are often seeking first-mover advantages, however they are exposed to risks and additional costs in this quest. These risks and costs can decrease the performance of an organization, however, in this



type of industry there are no imitators looking to be second movers. Thus, from a relative standpoint, the costs and risks of being a first mover are common to all of the organizations.

Social-Based Imitation

Organizations are influenced by and often imitate the innovations of other organizations, especially those considered leaders or high performers (Leroux, Pupion and Sahut, 2011). Lieberman and Asaba (2006) organized theoretical work on organizational imitation into two broad categories. One category, labeled information-based theories, is associated with imitation that stems from organizations imitating another organization's innovation because they are uncertain about the best actions for themselves. The idea is that the initial organization has better information than the imitating organization and imitating it is better than not, in part, because it also provides legitimacy. These imitation efforts are akin to social learning and they can result in herd-like behavior (Bikhchandani, Hirshleifer and Welch, 1992). In this section this type of imitation is referred to as social-based imitation to maintain a broad categorization and consistency with network and legitimacy literature. These literatures often discuss the social-based nature of economic activities (Granovetter, 1973; Krackhardt, 1992; Zimmerman and Zeitz, 2002). In the following section a discussion on what Lieberman and Asaba (2006) refer to as rivalry-based imitation is presented, however the label "skill-based imitation" is used to enhance generalizability and magnify the pragmatic nature of this type of imitation. This type of imitation is based on organizations imitating what they perceive to be innovations that give an advantage to the competitor who creates it. The goal of the imitating organization is to achieve parity in order to avoid being at a competitive disadvantage.



Based on integrating the seven assumptions a new industry made up of a small number of initial innovators and a larger set of social-based imitators who enter at various times after the innovators will have less variance in innovation type as compared to independent innovator industries. In a social-based imitative industry, the initial entrants introduce their innovations and later entrants copy the innovations of prior entrants who are closest or most similar to them. The motivation to engage in social-based imitation is generally explained as legitimacy seeking (Deephouse and Carter, 2005). Legitimacy seeking imitation probably maintains a minimum threshold of perceived efficiency effects that an organization will not go below, however chronic uncertainty can curtail rational efficiency seeking (Zimmerman and Zeitz, 2002).

These imitation effects are illustrated in Table 1 where upon entry Competitors 3 and 4 imitate Competitors 1 and 2 respectively. When Competitors 5 and 6 enter during Time 3 they also imitate Competitors 1 and 2 respectively. Because of the lag effect on imitation, imitators copy the innovations from one period prior. This is shown in Time period 4 where Competitors 3 and 5 are able to imitate an advanced version of Competitor 1's innovation that was introduced in Time period 3. Competitor 4 is able to imitate Competitor 2's advanced innovation in Time period 5. Competitor 6, however is no longer viable enough at this point to imitate Competitor 2's advanced innovation. In this case, Competitor 6 was late to the market along with Competitor 5, but unlike Competitor 5 was imitating an innovator (Competitor 2) who had an innovation that was inferior up to that point. The combination, in this example, of an inferior



innovation and being late was enough to cause Competitor 6 to fail. If additional social-based imitators enter this industry, they will also imitate the innovation that is most prevalent or close to them. This results in a small number of innovation types that organizations choose in order to gain or retain legitimacy. Other aspects of these organizations may be used to gain efficiencies in order to acquire sufficient profitability to continue operation.

The evolution of an industry characterized by social-based imitation is likely to be influenced by a low degree of competitive dynamism. This is because organizations will continually attempt to improve their imitative behaviors in an effort to be more similar to their chosen competitors. Organizations are not so concerned about being on the cutting edge. Rather, they want to be close to particular competitors so that they can achieve parity and piggyback off of the competitor's legitimacy. As organizations begin to imitate a select few innovators, the industry may split into strategic groups that may differ on a variety of characteristics, although the organizations within each group remain similar. Over time, if one group begins to show economic or legitimacy superiority over the other there may be pressure on some organizations to "switch" their imitative attempts. Long-standing groupings, however, are not likely to be changed easily and significant disruption will likely be required for this type of change.

Organizations using social-based imitation can increase their legitimacy (Deephouse, 1996), and based on this analysis it can be done fairly quickly. Moreover, the imitation can lead to competitive parity which can help an organization avoid variation that could increase risk of failure. Organizations that rely on social-based imitation do not necessarily know if they are imitating best practice or not. They are relying on the existence of the organization they are imitating as being indicative of sufficient economic feasibility and legitimacy. No examination of the possible effects of future conditions is done. Thus, what is acceptable now may not be in the future and that can translate into a mass failure by an entire set of organizations. This is akin to the blind leading the blind whereby reliance on the actions of others as valid information is misplaced (Bikhchandani et al., 1992).

Skill-Based Imitation

The motivation to imitate a perceived best practice would seem simple enough in that if the best practice were to make the imitating organization more economically efficient than by either innovating or not imitating, the organization would feel compelled to imitate it. Other factors would also be taken into account such as a comparison of the cost to imitate versus the cost of innovating (Grahovac and Miller, 2009). Imitation is often cheaper on average, but there is significant variance based on innovation, firm-level, and industry factors (Mansfield, Schwartz, and Wagner, 1981). We must consider that the organization is aware of the best practice, which has been assumed above. There may also be a dearth of new knowledge that limits opportunities for the widespread emergence of innovations (Acs et al., 2009).

The degree of imitation effort varies by industry (Mansfield, 1961). One factor to consider is how relevant an innovation is to other organizations who may be considering imitation (Greve, 1998). In some industries, competitors have high levels of market commonality and resource similarity (Chen, 1996) that cause certain innovations to be highly relevant to the majority. Another factor is that key employees may leave an organization and form a new one in an effort to imitate an effective innovation and profit from it themselves (Ziegler, 1985). In addition, some organizations and certain innovations are more likely to attract imitation attempts. For example, organizations that are considered more innovative by their peers may be targeted more for imitation by these peers. In addition, the practices to be imitated need to be visible. In geographically proximate industries, for example, organizations can more effectively monitor each other (Arikan and Schilling, 2011) and this can enable better imitation. Finally, efforts by the organization being imitated to prevent imitation should be considered. Imitation is not always avoided since there are economic and institutional advantages to being imitated (Polidoro and Toh, 2011). For example, innovative organizations may prefer to allow imitation because it limits the risks posed by new alternative approaches and because it helps solidify the legitimacy of their innovations.



Based on an integration of the seven assumptions, a new industry made up of a small number of initial innovators and a larger set of skill-based imitators who enter at various times after the innovators will have less variance in innovation type as compared to independent innovator or social-based imitation industries. This relatively limited variance is an outcome of the seeking of best practices. In this type of industry, the initial entrants introduce their innovations and later entrants copy the innovations of prior entrants who appear to have the most skilled innovation. The motivation to engage in skill-based imitation is based on efficiency seeking whereby organizations imitate the most skilled competitors to improve their performance. For example, an organization may copy a competitor's manufacturing efforts to reduce costs or increase quality. This imitation does not directly consider the number of competitors engaging in the innovation. It primarily considers the economic efficiency to be gained while taking into account costs and risks (Grahovac and Miller, 2009).

These imitation effects are illustrated in Table 1 where upon entry Competitors 3 and 4 imitate Competitors 1 and 2 respectively because there is not a clear difference in skill between them. They are just different approaches whereby no organizations are aware at this point of one being better than the other. Competitors 5 and 6 do the same thing when they enter during Time 3. Competitor 1 is able to improve its skill level during Time 3 and as Competitors 3-6 notice this they plan to imitate Competitor 1 during Time 4. This is akin to the fragility of herd-like imitation that exists when new information arises (Bikhchandani, Hirshleifer and Welch, 1998) except that, in this case, there is demonstrable skill difference. Competitor 2, however, is already aware of its own plans to improve its innovation by Time 4 so it does not change plans and imitate Competitor 1 (since the skill level difference is not discernible). The same process occurs for Competitors 1 and 3-6 during Times 5 and 6. This time, however, Competitor 2, who is slower than Competitor 1 at improving its innovation notices that Competitor 1's innovation is more skilled (AA vs. B) than its plans for Time 6 so it imitates Competitor 1 instead of pursuing the planning of the enhancement of its own version of the innovation.

Unlike an industry that is primarily focused on social-based imitation, the evolution of an industry characterized by skill-based imitation is likely to be influenced by a high degree of dynamism. Organizations will continually attempt to improve their innovations by imitating those organizations that appear to be engaged in the best practice. If there is fluctuation of "who" is considered best to imitate, this can cause a temporary slowing or change in imitation that decreases the rate of narrowing of innovations within the industry. In time, however, more organizations will identify and imitate the top innovator and there will be similarity among organizational innovations.

Although this type of imitation may not lead to the highest level of performance, it can help an organization in an effort to gain or maintain an advantage over some of their competitors. This can be understood from the perspective that there are many innovations that organizations engage in, and those organizations that are able to avoid the most competitively disadvantageous innovations will perform better. Thus, it is an avoidance of error rather than the seeking of self-created advantage that drives these organizations. One problem with skill-based imitation is that new and better skills may arise frequently within an industry. Thus, organizations may have to engage in multiple instances of copying as newly recognized "better" firms come along. These organizations are always one step behind, especially when change frequently occurs.

DISCUSSION AND IMPLICATIONS

Because the effects of these three types of innovation and imitation vary, they are important for organizations to consider. Being able to engage in independent innovation, social-based imitation, and skill-based imitation are probably important for all organizations but to varying degrees depending on their circumstances. How much of each is appropriate depends on factors such as the goals and capabilities of the organization, perceived competitors' capabilities, and the degree of environmental uncertainty. Since organizations seek both legitimacy and economic efficiency (Yang et al., 2012), it is expected that organizations would need to seek some integration of the two as they make innovation



and imitation decisions. Below, implications are discussed for practitioners including industry incumbents and potential new entrants. This is followed by a discussion of some implication for researchers.

The deductive reasoning process used with the seven assumptions, and portrayed in Table 1, act as a starting point for implications for industry incumbents that vary depending on the degree to which independent innovation, social-based imitation, and skill-based imitation is relied on in a particular industry. For each of these types of industries an organization's success depends on factors such as the prevention of or assistance in others' imitative efforts and the type of strategy the organization selects. For incumbent organizations that develop their own innovations independently it is quite apparent that they may want to protect any first mover advantages that these innovations create. An innovating organization may want to rely more on tacit knowledge, for example, when developing an innovation because it may make it more difficult for others to copy (Reed and DeFillippi, 1990). Competitor delays caused by imitation difficulty can extend the profitability of an innovation for the innovator (Barney, 1991; Dierickx and Cool, 1989) as well as provide additional time for the innovator to develop and profit from their next innovation.

Although these imitation-avoidance approaches make sense for those in skill-based imitative industries it is not necessarily advantageous for innovators in social-based imitative industries. In social-based imitative industries, an innovator may want to be imitated in order to enhance the legitimacy of their innovation or to maintain industry control (Drucker, 1985). The more organizations that imitate them the more that will be exposed to the innovation and its diffusion can become contagious (Dobrev, 2007). A different reason for assisting in the imitative attempts of others is to get them to imitate a technically inferior innovation in hopes of reducing the competitive capability of the imitating organizations. In skill-based imitation industries, an innovator who is unable to prevent imitation of their innovation may instead redirect others' imitative efforts toward competing, but inferior, innovations in hopes of sending competitors down a less advantageous path.

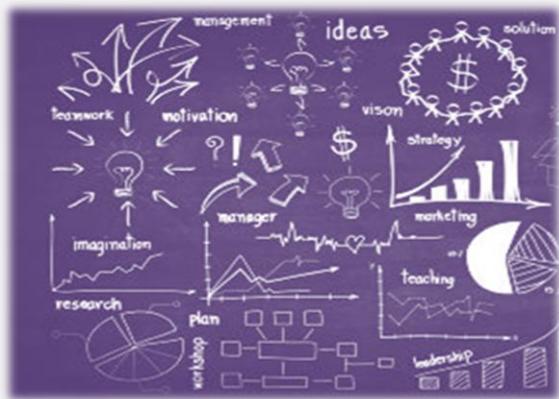
Potential new entrants must deal with even more issues than those dealt with by incumbents. One issue for potential new entrants is identifying which industry to enter. Performing well as a newcomer can vary in independent innovation, social-based imitation, and skill-based imitation industries. Assuming for the moment that each industry under consideration is equal in regards to performance, demand, supply, etc. we could focus purely on the innovation versus imitation differences. Imitation offers quicker access to legitimacy (Dobrev, 2007) which is critical for new entrants. It also offers a way to avoid severe competitive disadvantage which would allow new entrants to survive long enough to gain a foothold in the industry. Thus, we would expect imitation to provide a safer form of entry into an industry. The next decision would be to consider whether imitation should be social-based or skill-based. New entrants may not have the prerequisite abilities to distinguish between low and high-skilled innovations of competitors and they would therefore be at risk of imitating lower skilled competitors and be at some risk of competitive disadvantage (although not as much at risk as an independent innovator).

Another approach for new entrants to decide on which industry type to enter would be to assess their own skills at innovation and imitation and select the one in which they are more adept. For example, if a new entrant has always been good at innovating they may be better off entering an independent innovator industry because it can rely on its strength and there will not be many imitators to worry about. The new entrant will be able to capture any profits it creates. New entrants who are better at imitating, however, would be better off entering a social-based or skill-based imitative industry because it can rely on its strength and gain legitimacy quickly. Being new, an entrant skilled at imitation may have an increased chance of success by imitating highly-skilled incumbents since the new entrant has no core social group of organizations that it is pressured to follow. Incumbents, on the other hand, may feel pressure to continue to imitate particular organizations in social-based imitative industries (Meyer and Rowan, 1977).

Another consideration for organizations is that their innovative or imitative efforts that are initially effective may result in worse relative performance in the long run as competitors are provoked into coming up with different and



better innovations to compete (Barnett and Hansen, 1996) and these innovations may not be achievable by the focal organization (Derfus et al., 2008). Innovations may be emergent with changes that are unforeseen even by the innovating organization (Mintzberg and McHugh, 1985). Thus, initially successful competitive responses can lead to an organization being at a competitive disadvantage. Moreover, flexibility takes on added complexity for organizations. In what ways should an organization be flexible? Should the organization be able to innovate or imitate better? Some organizations will be learning how to innovate more than others, while other firms will be learning more about imitation as they operate in their industries over time. These skills may be differentially advanced among competing organizations and this can further complicate future scenarios for these organizations.



There are several implications for researchers that can be drawn from the outcomes of the deductive reasoning performed here. In the area of competitor analysis it is important for researchers to distinguish organizational perceptions from reality. Researchers often capture actual industry and competitor information and presume that this information is similarly captured and evaluated by organizations when making decisions. However, competing organizations can be inaccurate in their assessment of each other (Author, 2002), and this may cause researchers to link organizational innovations with organizational and industry factors in ways that are inconsistent with the approach used by managers. For instance, researchers may assume industry leadership based on profitability or some other factor and the incumbents in the industry may actually look at other factors, such

as technological or customer reputation. In addition, particular organizations in an industry may each look at factors that are different from one another.

For researchers, it is also important to determine the extent to which organizations are using these three innovation and imitation strategies. Although this research is based on extremes, industries are much more likely to have some kind of mix of the three strategies. This not only complicates matters for researchers it also provides opportunities for them to increase our understanding of how organizations operate in various combinations of these strategies. This also raises the issue of continuing to advance competitive dynamics research. An interesting aspect of an organization's environment is that it is not just the general environment that it must concern itself with (just like its competitors must do), but it must also deal with the innovations of competing organizations. This raises the issue of achieving fit with the environment as a determinant of organizational performance. An organization's achievement of fit, and their resulting performance, can be significantly affected by competitors' actions (Smith, Grimm, and Gannon, 1992). Thus, understanding the general environment that exists outside an organization's industry is important, but so is predicting competitor innovation.

We could stop the competitive dynamics analysis at this point with the simplistic suggestion that organizations evolve over time to be better able to deal with their environments and those that do not will fail (be selected out). Of course, selection pressures will eliminate some of the competitors (making some room for new ones) and enable the more rapid growth of others. Thus, we would be left with a set of organizations that continue to evolve toward improved environmental fit. Many of these types of environments, however, frequently change over time creating a moving target for organizations which can nullify continuously improving fit (Dunphy and Stace, 1988). Much of the change in these environments is created by the very acts of these competing organizations (Barnett and Hansen, 1996). In trying to outmaneuver competitors, an organization engages in innovations that influence its environment. For example, in trying to beat a competitor by offering new product features an organization may end up



causing consumers of the product to increase their expectations of the frequency of the appearance of new product features. The organization must now deal with these increased expectations to remain fit. This is referred to as red queen competition whereby competing firms continually try to one up the others causing each of them to work hard for little relative gain (Barnett and Hansen, 1996).

With the environment changing, in part from its own and its competitors' actions, an organization may need to use a different approach to enhance its environmental fit over time. Thus organizations may change their approach over time and this can increase the complexity for researchers. For example, organizations may begin a random trial and error approach in an attempt to create some advantageous options to pursue (Cohen and Malerba, 2001). But random trial and error is an expensive approach that can end up causing significant harm to the organization and can potentially decrease its survival chances because of the potential waste of resources and the chance that nothing substantively positive will come of it (Boulding and Christen, 2003). Researchers could track these types of changes that organizations make over time in order to

identify the antecedents and outcomes associated with them.

CONCLUSION

Using a deductive reasoning approach to examine the outcomes of integrating critical assumptions of the RBV and AMC, I have identified the benefits and drawbacks associated with the growth and diffusion of innovation and imitation in three different types of industries. These three industries, focused on independent innovation, social-based imitation, and skill-based imitation, each have unique effects that can provide guidance to managers and researchers. The integration of the assumptions shows that the ability to gain and sustain competitive advantage is greatly affected by the variance in innovations that stems from independent innovation, social-based imitation, and skill-based imitation. Those organizations wishing to achieve parity versus those organizations wishing to achieve uniqueness will find different degrees of success in each type of industry. Managers of organizations that are considering entering a specific industry may wish to examine the assumptions used here to make sure they are consistent with the situation in order to obtain the best results of this type of analysis.



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