
THE DIFFUSION OF INNOVATIONS MODELS: APPLICATIONS TO EDUCATION POLICYMAKING AND CRITIQUE

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Abstract

The origins of the diffusion of innovations theory are varied and span across various disciplines, and in a sort of contexts. The diffusion of Innovation framework is a theory of how, why, and at what rate new ideas, concepts, technology, technical information, and actual practices spread or diffuse through cultures or system. When innovations happen, innovations may be spread from the innovator (a state or government) to any other groups (states or governments). The inquiries of state policy innovation have been a foremost subject in political science and public policy. Political and policy academics and scholars are attracted in looking at how and why a policy or program spreads (diffusion) from one state government to another and what make happen a government or state to adopt a new program or policy. This paper will focus on (1) the diffusion of innovations model's general characteristics, its theoretical origins and application across fields, (2) the history of its application to policy and politics and the central premise, (3) the dominant methodological tradition in policy and political science, (4) applications to education policymaking, and (5) the limitation.

Keywords: diffusion of innovations theory, political science and public policy

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Introduction

In the era of globalization, where almost all societies share the same problems and challenges and hold global interdependencies in the areas such as economics, business, and education, the spread of policies, programs, ideologies, innovations, technology, or information among and across groups, communities, organizations, societies, states, and countries has become more and more common. Various factors or reasons lead individuals, groups, communities, organizations, societies, states, and countries to adopt policies and programs from others. According to McLendon and Cohen-Vogel (2008), Cohen-Vogel et al. (2007), and Wejnert (2002), the factors or causes that influence the spread of policies and programs from one group to another group, from a state to another, or from a country to another country have long been the interest and concern to scholars and researchers in anthropology, sociology, communication, political science, and other disciplines.

In terms of policy and program innovations, according to Cohen-Vogel et al. (2007), in the U.S., political and policy scholars and researchers are interested in looking at how and why a policy or program spreads (diffusion) from one state government to another and what causes a government or state to adopt a new program or policy? Among political and policy scholars and researchers, the diffusion of innovation framework has become the model for them to investigate the policy or program innovations in the American states. This paper will focus on (1) the diffusion of innovations model's general characteristics, its theoretical origins and application across fields, (2) the history of its application to policy and politics and the central premise, (3) the dominant methodological tradition in policy and political science, (4) applications to education policymaking, and (5) the limitation.

Characteristics, Theoretical Origins, and Application across Fields

The diffusion of Innovations model or framework is a theory of how, why, and at what rate new ideas, concepts, technology, technical information, and actual practices spread or diffuse through cultures. According to Rogers (1995), in his book *Diffusion of innovations (4th edition)*, diffusion of innovations is related to the spread of ideas and concepts, technical information, and actual practices within a social system, where the spread denotes flow from one source to an adopter or actor, typically through communication and influence. Such communication and influence may change an adopter's likelihood of adopting an innovation. The adopter or actor who adopts the innovation can be any societal entity such as individuals, groups, organizations, states, countries. In addition, Rogers (1995) categorized the adopters into five kinds of the diffusion process, according to Innovativeness: "(1) Innovators (venturesome), (2) Early Adopters (respectable), (3) Early Majority (Deliberate), (4) Late Majority (skeptical), and (5) Laggards (traditional)" (Rogers, 1995, 183-185).

Rogers's (1995) definition was used by scholars and researchers such as Walker (1969) who defined the term innovation "simply as a program or policy which is new to the states adopting it, no matter how old the program may be or how many other states may have adopted it" (881). In addition, Gray (1973) who generally defined "the term innovation as an idea perceived as new by an individual; the perception takes place after invention of the idea and prior to the decision to adopt or reject the new idea" (p. 1174). In terms of diffusion, Rogers (1995) stated that diffusion was "the process by which an innovation is communicated through certain channels over time among the

members of a social system. An innovation is an idea, practice, or object perceived as new by an individual or other unit of adoption. The diffusion of innovations involves both mass media and interpersonal communication channels” (p. 409). Additionally, Gray (1973) stated, “the process by which an innovation spreads is called diffusion; it consists of the communication of a new idea in a social system over time” (p. 1176).

In other words, once innovations occur, innovations may be spread from the innovator (a state or government) to any other groups (states or governments). This process has been proposed that the life cycle of innovations can be described using the S-curve or diffusion curve. In the early stage of a particular innovation (a new policy), the S-curve moves relatively slow as the particular innovation (a new policy or program) establishes itself. At some point, because of the communication networks and interactions, individuals and groups or governments begin adopting it and the S-curve increases more rapidly. In the later stages, the S-curve rate of adoption starts declining because the communication channels are exhausted and because most prospective individuals and groups or governments have adopted and refused the particular innovation (a new policy or program), creating a more gradual slope of the S-curve (Rogers, 2003 as cited in McLendon & Cohen-Vogel, 2008). The origins of the diffusion of innovations theory are varied and span across multiple disciplines, and in a variety of contexts. Consequently, various approaches to conceptualizing innovation in the scholarly literature do exist. The studies of diffusion in anthropology are the oldest traditions. Subsequently, the studies of diffusion or the rate of adoption have become a widely important area of research in rural sociology, economics, communication, organization, public health, business, geography, and political science (Rogers, 2003 as cited in McLendon & Cohen-Vogel, 2008).

In diffusion studies, each discipline has its own research focus in terms of the innovation types and the units of analysis. For example, the communication researchers are interested in the news events. While the rural sociologists focus on agricultural innovations (Rogers, 2003 as cited in McLendon and Cohen-Vogel, 2008). In 1943, two sociologists, Bryce Ryan and Neal Gross published their influential study of the diffusion of hybrid seed (corn) among Iowa farmers. The infamous hybrid-corn study resulted in a renewed wave of research (Wejnert, 2002; Gray, 1973). In anthropology, researchers concentrate on the spread of the ideas among villages and tribes, while the diffusion such as drug adoptions or medical equipment or fertility-control methods among physicians, doctors or nurses and health care organizations (e.g. hospital s) is the focus of researchers in public health (Rogers, 1995; McLendon and Cohen-Vogel, 2008). In technology, the researchers are interested in the diffusion of technological innovation (Burt, 1987). In addition, the organizational studies, the researchers define “innovation as the successful implementation of creative ideas within an organization” (Amabile et al., 1996, 1155) and they concentrate on creativity and innovation. “Creativity is the seed of all innovation, and psychological perceptions of innovation (the implementation of people's ideas) within an organization are likely to impact the motivation to generate new ideas” (Amabile et al., 1996, 1155). The diffusion of innovation is also considered a major driver of the economy; economists tend to focus on the process itself, from the origination of an idea to its transformation into something useful, to its implementation; and on the system within which the process of innovation unfolds. Easterly (2001) said that the leak of knowledge has become the most important factor in economic development.

While in political science and public policy studies, scholars and researchers concentrate on the diffusion of innovations (policies or programs) at local, state, or national government levels as their primary unit of analysis (McLendon and Cohen-Vogel, 2008; Cohen-Vogel, et al., 2007; Berry,

1994; Berry and Berry, 1990; Walker, 1969; and Gray, 1973). In this field, an innovation, simply put, is a policy or program perceived as new by a state that adopts it in spite of how old the policy may be or how many other states or adopters have adopted the policy (Walker, 1969; Gray, 1973; Berry and Berry, 1990; Cohen-Vogel, et al., 2007).

The Application to Policy and Politics and Central Premise

In the United States, the inquiries of state policy innovation have been a foremost subject in political science and public policy (Savage, 1985; Berry, 1994) after the emergence of the influential studies by Walker (1969), Gray (1973), and Berry and Berry (1990, 1992). According to Berry (2008), “Most policy innovation and diffusion studies have adopted Walker’s (1969) definition of a policy innovation as a program or policy new to the jurisdiction adopting it” (1). In his article, Walker (1969) stated that two correlates of a state policy innovation were demographic factors and political factors. In addition, in policy studies, Berry and Berry (1999, 1990) note that the spread of a policy or program innovation is usually explained by connecting to the two groups of determinants, namely, the internal determinants (intrastate) and regional diffusion (interstate). The first group, named the internal determinants, covering the social, economic, political and other characteristics, argues that a state’s internal determinants determine a state’s innovativeness (Berry and Berry, 1999, 1990).

According to the first group’s view, a state or governmental unit is not conceived of as being affected by the actions or movements of other state governments (Berry and Berry, 1999; Berry, 2008). Walker (1969) concluded that the characteristics of states that adopt new policies or programs are the ones, which are “bigger, richer, more urban, more industrial, have more fluidity and turnover in their political systems, and have legislatures which more adequately represent their cities” (887). On the other hand, according to the second group, called the regional diffusion models, the probability of “a state adopting a particular policy is higher if neighboring states have already adopted the policy” (Walker, 1969, p. 897). The regional diffusion mainly focuses on the reason of a state’s innovativeness is because of the interstate competition (Walker, 1969; Berry, 1994, 1999; McLendon et al., 2005; Cohen-Vogel et al., 2007). In addition, the second group views a state’s adoptions of policies as emulations of previous adoptions by other states. “The diffusion models are inherently intergovernmental” (Berry, 2008, p. 2). In the diffusion model, Berry and Berry (1999) note that a state government learns from or copies each other for four primary reasons: learning, competition, public pressure, and vertical influence from oversight governments or bodies, and describe in depth four models of diffusion: national interaction model, regional diffusion or geographic proximity, isomorphism, and leader-laggard (the last to adopt an innovation).

Methodological Tradition

The event history analysis (EHA) has been the dominant analytic approach utilized to investigate state policy innovations by the political science and public policy scholars since the mid-1990s (McLendon and Cohen-Vogel, 2008). According to Berry (1994), the use of the event history analysis (EHA) for the reason that of the two groups - internal determinants (intrastate) and regional diffusion (interstate), no single group could explain for state policy innovation although internal determinants are probably the main factors that motivate policymakers to adopt a new policy in order to emulate other states. Berry (1994) proposed that “an appropriate explanation of state policy innovation” (p. 453) is to analyze the two groups (internal determinants and regional diffusion)

jointly, using the event history analysis (EHA). The event history analysis is designed to explain conditions under which state agencies adopt policy innovations. The event history analysis will enable researchers to conduct “pooled cross-sectional time-series analysis where the observed dependent variable is whether or not a state adopts the policy being studied in a particular time” (Berry, 1994, 453).

Although the EHA method seems to have much promise for state policy innovation studies, improvements can and should be made, particularly to mirror more complex forms of diffusion and intergovernmental interactions and communications (Berry, 1994). However, McLendon and Cohen-Vogel (2008) wrote that generally the application of the event history analysis (EHA) has helped the researchers to predict state policy adoption in terms of internal determinants and regional diffusion. The studies that employ the diffusion of innovations model on the state policy innovations or the comparative state politics have been exclusively dominated by employing the quantitative methods and approaches (positivist paradigm) that “make the study of why policies diffuse difficult” (Cohen-Vogel, et al., 2007, 19). They proposed the use of qualitative approaches for future research on the determinants of education policy innovation or adoption although the approaches also hold limitations.

More specifically, they think that the qualitative approaches and techniques may offer new perspectives on exploring the factors, leading a state adopts a new policy and may be able to answer competing explanations for policy adoption by interviewing the main policy actors in adopting and non-adopting states to learn and find out “the role of policy entrepreneurs, preferences for tried and tested policy solutions, networks of professional educators, and interest group competition in the innovation diffusion process” (McLendon and Cohen-Vogel, 2008, 46).

Applications to Education Policymaking

The studies that employ the diffusion of innovations model in the adoption of educational policies and programs both in K-12 and higher education among the U.S. states have been pioneered by Mintrom (1997), Mintrom and Vergari (1998), Cohen-Vogel et al. (2005), Doyle (2006), McLendon, Hearn, and Deaton (2006) (McLendon and Cohen-Vogel, 2008). According to McLendon and Cohen-Vogel (2008), the policy innovation and diffusion lens has been used by researchers to focus on the intrastate and interstate influences on states’ adoption of a specific education reform in K-12 and higher education. Particularly, the focus is on answering the question of “to what extent are decisions to adopt an education innovation influenced by a combination of (1) a state’s socio-demographic, economic, and political conditions and (2) the policy choices of other states?” (45).

For example, Mintrom and Vergari (1998) used the event history analysis (EHA) of school choice, present and test a theoretical model for integrating policy network and diffusion ideas. They found that policy networks supported the diffusion of innovations. In particular, when they controlled for school system characteristics, state politics, maturation effects, and diffusion from other states, their study indicates significantly positive effects of (1) policy entrepreneurs’ presence in a state, (2) the extent to which entrepreneurs used external networks (networks with policy entrepreneurs from other states), and (3) the extent of their internal network use (networks with government and those around government within the state), on the likelihood that the state considers school choice. In addition, Mintrom and Vergari (1998) found that entrepreneur presence and internal network use significantly increased the possibility of legislative approval of school

choice, even though external networks did not. They also found that the external networks that provide insights into how approaches used elsewhere could apply in policy entrepreneurs' own states, were critical to getting legislatures to consider the policy, as is a good understanding of the policy networks within one's own state.

Another application of the diffusion of innovations model in the adoption of educational policy is the study of the postsecondary finance policy adoption done by [Cohen-Vogel et al. \(2007\)](#). In brief, their findings indicate that the merit aid programs spread because the competition among neighboring states and the direct and indirect or formal and informal network among policymakers and their agents. Their study both supports the regional diffusion model and provides evidence that state policy innovation is partly the effect of policy emulation acted out in nearby states, which have adopted the policy.

The Diffusion of Innovations Model: Limitations

The application of the diffusion of innovations model has been appealing to public policy, political science, and later educational scholars and researchers. [McLendon and Cohen-Vogel \(2008\)](#) wrote that generally the application of the diffusion of innovations model with its event history analysis (EHA) has helped the researchers to predict state policy adoption in terms of internal determinants and regional diffusion.

However, they wrote that there were some potential limitations of the model. First, the studies of policy innovation diffusion “largely overlook the why’s of policy diffusion, concentrating instead on demonstrating its existence” ([McLendon & Cohen-Vogel, 2008, 40](#)). Another limitation is that the policy innovation diffusion researchers have concentrated only on the determinants of policy adoption; however, they do not take into account other stages in a policy’s passage such as the determinants of problem identification, agenda formulation, policy implementation, and policy termination or rejection. The third limitation is that the researchers employing the diffusion of innovations model have just stressed on the positive regional effect, paying no attention to the negative regional effect ([McLendon & Cohen-Vogel, 2008](#)). The fourth limitation is that the diffusion of innovations model may not work if only one state uses the policy. The last limitation, but not the least, in terms of the methodological paradigm, the researchers have exclusively employed the quantitative methods and approaches (positivist paradigm) that “make the study of why policies diffuse difficult” ([Cohen-Vogel et al., 2007, 19](#)). In other words, they have ignored the potential use of the qualitative approaches and techniques that may offer new perspectives on exploring the motives, leading a state takes on a new policy.

Conclusion

The inquiries of state policy innovation have been a foremost subject after the materialization of the influential studies by [Walker \(1969\)](#) and [Gray \(1973\)](#) and [Berry and Berry \(1990, 1992\)](#). Although, the origins of the diffusion of innovations theory are varied and span across multiple disciplines, the model has become the lens of the public policy, political science, and later educational scholars and researchers to examine state policy innovations. By using the model, the researchers have used the quantitative approaches along with the event history analysis (EHA) to examine the spread of a policy or program innovation, that is usually explained by referring to the two groups of determinants, namely, the internal determinants (intrastate) and regional diffusion

(interstate) (Walker, 1969; Berry, 1994, 1999; McLendon et al., 2005; Cohen-Vogel et al., 2007). However, the model has also some limitations. The researchers have not thoroughly provided the explanations for how and why spread takes place, have not largely focused on the other stages in a policy journey, and they have not considered the potential application of the qualitative approaches and perspectives on exploring the factors, leading a state takes on a new policy.

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