

Insight on Theoretical and Conceptual Review on the Diffusion of Innovative Marketing Digital Transformation Systems in Circular Economy Era

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Abstract

This article is related to the diffusion of innovations, especially those known based on the Innovation Diffusion Theory or IDT which states that in general diffusion behaviour can be defined through individual perceptions regarding the use of certain innovations. The basic definition of diffusion gives rise to different understandings in two research streams. First, in economics and non-marketing disciplines, diffusion is seen as the spread of an innovation over time among different groups (Brown, 1981). While the second in the marketing discipline, diffusion refers to "the process of an innovation being communicated through certain channels over time to members of a social system" (Rogers, 2003, pp. 110-119). This article closes with suggestions for a more comprehensive innovation marketing system based on the framework of digital transformation that not only would be useful for the future researcher, but also for the real-world domain as it begins with people his/herself, the marketing process, and marketing application in real-world business practice as it gives them an advantage over their competitors to strive during the age of circular economy.

Keywords: diffusion, innovation, innovation diffusion, innovation diffusion theory, IDT, economics, marketing, digital transformation

1. Introduction

Diffusion has its origins in the field of sociology and has been used to study several innovations. Because this study will specifically analyze the acceptance of innovation, namely digital marketing by customers in the retail sector in Indonesia, Roger's DOI will be included in the analysis. Diffusion is therefore defined as "the communication of a particular innovation through a population" (Golder & Tellis, 2004; Mahajan et al., 1990; Mahajan et al., 2000; Rogers, 2003). Innovation as defined by Rogers (2003) is the new use of an idea, thinking, practice, or object by the individual or group that adopts it.

Rogers (2003) further explains that

"It matters little, as far as human behaviour is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new and different to the individual, it is an innovation" (hal.36).

This statement leads us to understand that the innovation of something is not determined by whether or not the innovation is new in the market, but is more related to the individual's view of the innovation and whether it is different from before. The study of the adoption and diffusion of IS and IT can be said to have originated from the work of diffusionism in the field of anthropology in Germany-Austria and England in the early 20th century which first stated that a society that introduces various innovations will produce "the most" changes. Gabriel Tarde in 1903 in his quest to understand why so few innovations were accepted and widely adopted by society defined what he called "the laws of imitation" (Rogers, 2003, p. 64) and proposed an S-shaped diffusion curve and the existence of the role of opinion leaders in the innovation diffusion process.

However, the "revolutionary paradigm" in diffusion research only emerged in the early

1940s when two sociologists namely Bryce Ryan & Neal Gross in 1943 carried out their famous study to understand the diffusion of new hybrid corn seeds in farmers in Iowa, USA (Rogers, 2003, p. 124). They did this based on the observation that corn seeds which came from Iowa State University researchers in 1928 were found from the laboratory experiment to produce the highest output per hectare and were more resistant to pests and diseases. The results from laboratory experiments were somehow different as actually the seeds could not be bred easily by farmers. According to their observations, this puts farmers at a disadvantage because it forces them to replant new corn kernels each year. Nevertheless, it is surprising that apart from these deficiencies, the facts from the field research show that after 15 years, almost all farmers have adopted or used the new corn seeds.

This causes them to be interested in determining the level of adoption and also the factors that influence individual farmers to adopt these hybrid corn varieties. Ryan & Gross then interviewed more than 300 farmers in Iowa and found that farmer adoption rates followed an S-curve, the same curve that Gabriel Tarde had postulated nearly 50 years ago. Ryan & Gross's findings eventually led Deutschmann & Fals Borda in 1962 to identify five adopter categories, namely (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards (Rogers, 2003, p. 301).

This adopter category is placed on the XY curve, where the X-axis represents time, and the Y-axis means the number of adopters will be in the form of an inverted U or known as a bell-shaped curve. Ryan & Gross argue that farmers who adopt hybrid corn earlier (innovators & early adopters) view the sales force as the most important channel of persuasion. Meanwhile, those who adopted the hybrid seeds later (early majority, late majority & laggards), consider their friends as the most important persuasion channel (Rogers, 2003, p. 128).

Until now, most of the new product diffusion studies are based on the shape of the diffusion curve developed by Ryan & Gross and Gabriel Tarde (Rogers, 2003, p. 69). This is evident in all disciplines, for example, in the marketing discipline that studies sales of new products per period will form a bell-shaped curve (on the left, in Figure 1), while the cumulative curve of new product sales will be shaped like the letter S (on the right in Figure 1):

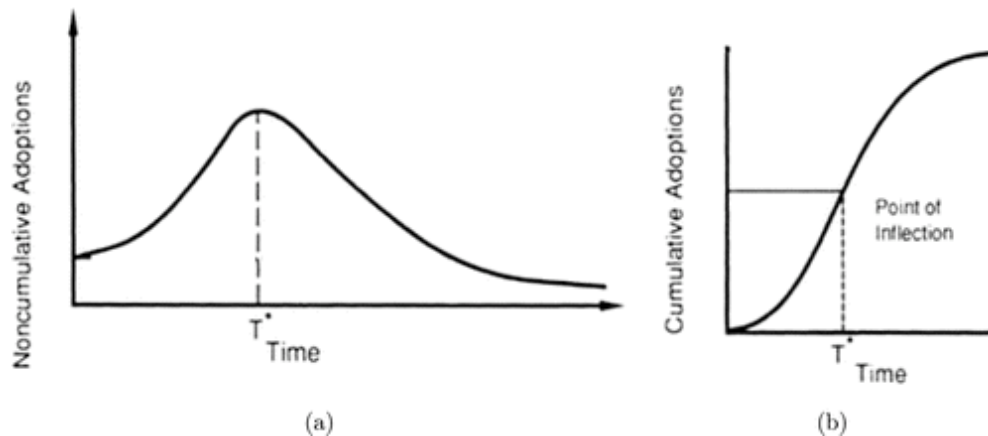


Figure 1 New Product Diffusion Curve (Source: Mahajan et. al., 1990, Fig. 1.b)

Development of Innovation Diffusion Models & Innovative Marketing Digital Transformation Systems

More than 20 years since the introduction of the classic model of diffusion and adoption by Ryan & Gross, studies and research on diffusion have progressed and led researchers to agree on defining diffusion and adoption as the dispersion of (1) an object, idea, or practice, (2) occurring over time, and (3) carried out by units that adopt it (individuals, groups, corporate units) contained in (4) communication channels, (5) social structures (networks, communities, classes) that have (6) value social values or culture (Katz et al., 1963).

Based on this same understanding, diffusion models are increasingly being introduced. One well-known diffusion model is called the First-Purchase Model which is based on the results of

studies by Fourt & Woodlock (1960), Mansfield (1961, 1968a, 1968b), and Bass (1969) which focus on the market in aggregate and seek to identify the role that by communication channels, social networks and demographics on the adoption of new products. This diffusion model only considers two market segments, namely the potential and current market segments. They also analyze the communication channels contained in mass media and word-of-mouth communications. In addition, the model also assumes that the population of potential customers is constant over time.

Another diffusion model by Fourt & Woodlock (1960), which is also known as the Pure Innovation Model is one of the earliest developed market penetration models. This model was developed using customer panel statistics to be able to predict purchases of new wholesale products such as margarine, pet foods, and detergents. This model modifies the basic diffusion curve by introducing an exponential diffusion curve and states that diffusion takes place because it is entirely due to the imitation process (Mahajan & Muller, 1979). This model states that market penetration occurs as a result of first-time purchases that accumulate until they reach diminishing returns, although they will never reach a saturation level. Furthermore, market penetration is said to be the result of one's exposure to external influences such as the mass media.

Mansfield (1961, 1968a, 1968b) then simplified the innovation-decision process to the lowest denominator, namely the cost function and gave birth to Mansfield's Diffusion Model. The model is specifically used in studying the technological substitution of industrial innovation. This specific diffusion process is described in the Mansfield model as a logistic curve based on internal influences. In his book, *The Economics of Technological Change*, Mansfield (1968a, 1968b) states the enactment of four premises of economic factors that will influence organizational adoption decisions, namely (1) the extent to which an innovation offers economic advantages over the technology it will replace, (2) the amount of uncertainty involved in the decision to adopt new technology, (3) the level of commitment required to pilot an innovation, and (4) the degree to which the initial uncertainty about innovation can be reduced.

After considering these four premises, the organization can then compare the potential economic risks with the potential economic benefits associated with a particular innovation as stated by Mansfield (1968a) as follows:

"If the expected returns from the introduction of the innovation do not exceed those obtainable from other investments by an amount that is large enough to justify the extra risks, the innovation should be rejected. If they do exceed those obtainable elsewhere by this amount, the profitability and risks involved in introducing the innovation at present must be compared with the profitability and risks involved in introducing it at various future dates" (hal.105).

However, most studies in the field of marketing regarding diffusion prefer to use the Bass Diffusion Model (Bass, 1969). This model has been used successfully in retail, industrial technology, agriculture, and consumer durable markets. This model uses three parameters, namely the coefficient of innovation or external influence (p), the coefficient of imitation or internal influence (q), and market potential (a or m). The premise of this model is that the diffusion of innovation occurs essentially through contact with previous adopters. The probability that an individual will adopt at the time T is a linear function of the number of previous buyers.

Among the advantages possessed by this model, two advantages need to be briefly reviewed related to the context of this research. First, this model integrates the approach offered by the Mansfield (1961) and Fourt & Woodlock (1960) models and has shown a good fit for the S-curve which is generally used in diffusion studies. Second, this Bass model includes the coefficient of innovation through the variable p and the coefficient of imitation through the variable q . This makes the Bass model very attractive for the study of diffusion behaviour.

But unfortunately, on the other hand, like other models, the Bass model has some limitations. The main limitation is related to the difficulty of the model to obtain good predictions because it requires users to obtain data when an innovation is about to spread (takeoff) and when the innovation is slowing down (Chandrasekaran & Tellis, 2007). This makes researchers consider using the Bass model because the type of data they need requires them to conduct longitudinal research over a long period, assuming they are not limited by time in completing the research.

Apart from the above, quite a lot of other researchers also considered the economic premise offered by Mansfield (1961) previously when considering including the cost factor in the diffusion

analysis of innovation in the field of marketing, for example, digital marketing. This is because according to the context of this dissertation research, researchers can focus their analysis on digital marketing adoption decisions made by individuals or individuals in their capacity as user actors either as a buyer, customers or consumers on a particular digital marketing platform. The relevance of this cost factor is mainly related to the user by his capacity to function as a business or managerial decision-maker in the organization to which he belongs. For this reason, the conceptual framework in digital marketing research should include the Perceived Economic Cost (PEC) construct that individuals have when deciding to adopt digital marketing or not and this leads the authors to the following preposition:

"Users' view of the costs that must be borne when using a digital marketing platform will affect the acceptance of the platform."

We believe that users, whether they are in organizations, decision-makers in the family, or individual decision-makers, will decide to adopt or not adopt the digital marketing platform based on the potential economic risks that they compare with the potential economic benefits they can achieve.

Therefore, even though the models of Bass (1969) and Fourt & Woodlock (1960) are interesting to consider in the analysis of the diffusion of digital marketing platform innovations, these models are seen by the authors as not by the specific objectives of the research which are bound by time/time and budget/ the budget is sometimes limited due to long-term longitudinal research methods. This leads us to base ourselves to "stand on the shoulder of the giant" on other alternatives in analyzing digital marketing adoption at the individual or individual level in Indonesia which is heavily influenced by these risk-benefit considerations from actors in the organization, business, and services because the economic premise of Mansfield (1961) seems appropriate to the context that occurred in Indonesia so it should be considered in future studies.

The adoption and implementation of innovative marketing digital transformation systems in Indonesia present both opportunities and threats for organizations operating in the country.

Opportunities:

Increased Efficiency: The use of digital marketing systems can help organizations streamline their marketing processes, improve the targeting of their campaigns, and enhance the customer experience, leading to increased efficiency and cost savings.

Improved Customer Engagement: Innovative digital marketing systems can enable organizations to better understand their customers and personalize their marketing efforts, leading to increased engagement and customer loyalty.

Increased Competitiveness: The adoption of digital marketing systems can help organizations stay ahead of the competition and differentiate themselves in the market.

Threats:

Cybersecurity Risks: The increased use of digital technology in marketing poses risks related to data security and privacy. Organizations need to ensure that their systems and data are protected from cyber threats.

Technological Dependence: Organizations relying too heavily on digital marketing systems may become dependent on technology and may struggle to adapt if systems fail or change.

Resistance to Change: Some employees or customers may resist the implementation of new digital marketing systems, leading to decreased adoption and effectiveness.

The adoption of innovative marketing digital transformation systems in Indonesia presents both opportunities and threats for organizations. To fully realize the benefits of these systems, organizations need to carefully consider the potential risks and ensure that their systems are secure, adaptive, and well-received by employees and customers.

2. Conclusion

The diffusion of innovative marketing digital transformation systems in the circular economy era in Indonesia is a relevant and important topic given the increasing focus on sustainability and resource efficiency in the country. Indonesia is facing significant environmental challenges, such as plastic pollution and deforestation, and the adoption of circular economy principles could help address these challenges. In Indonesia, the diffusion of innovative marketing digital transformation systems can play a critical role in promoting circular economy practices and helping organizations to better manage resources, reduce waste, and enhance customer engagement. However, there may also be challenges associated with the diffusion of these systems, such as lack of awareness, resistance to change, and limited technological infrastructure.

A study on the diffusion of innovative marketing digital transformation systems in the circular economy era in Indonesia could examine various factors that influence the adoption and implementation of these systems, including government policies, cultural attitudes, and the availability of technology and digital infrastructure. The study could also assess the impact of these systems on organizations and their stakeholders, including employees, consumers, and the environment. In addition, the study could explore the challenges and opportunities associated with the diffusion of these systems in Indonesia, such as the lack of awareness and understanding of circular economy principles, the limited availability of digital technology and infrastructure, and the need for collaboration between businesses, government, and other stakeholders.

Overall, a study on the diffusion of innovative marketing digital transformation systems in the circular economy era in Indonesia would provide valuable insights into the challenges and opportunities associated with the adoption and implementation of these systems in this context and could inform future efforts to promote circular economy practices in Indonesia. Based on the results of the analysis and discussion of this research, it is hoped that it can contribute to the development of marketing knowledge and information systems, especially in complementing our understanding of organizational transformation management in the field of marketing.

(1) Future research needs to have a scope that links research results originating from the fields of management and organization, MIS, and the field of informatics, especially digital transformation so that it can be seen as a multidisciplinary study and tends to have a multi-paradigm perspective Gioia & Pitre (1990) were among the first to discuss research philosophy and the adoption of analytical and methodological approaches that emphasized the importance of multiple social science paradigms to guide us in designing research, conducting data collection and producing research conclusions in the social field, especially in the field of the organization.

(2) The need for related research in the social sciences of organizational and business management that is struggling to achieve digital transformation to prove whether this is based on Gioia & Pitre (1990) which is further strengthened by other researchers (Martin, 1992; Schultz & Hatch, 1996; Hatch, 1997), the next field of management science is not only based on the research paradigm/scope (domain) which is separated per its field of knowledge (mono-discipline) but uses a paradigm from a multidisciplinary point of view to be able to understand the concepts that build theory, form research questions select a research methodology and conduct an analysis of the data obtained.

(3) The need for a research approach in the field of management and economics introduced in 1990 by Gioia & Pitre is hereinafter better known as a multiparadigm perspective and refers to the use of two or more paradigms in conducting studies or research and is expected to guide researchers through the research process they are conducting. Studies based on two or more post-1990 paradigms have also been carried out to examine organizational constructs such as those related to power and politics (Gaventa, 1980), culture (Martin, 1992), structure and strategy (Scott, 2003).

(4) The need for studies related to organizational constructs in understanding the management of health service organizations. This is because the organization is a complex system in terms of the organization as a rational system, natural system or open system (Scott, 2003). The complexity of this organization requires scientists to have a separate paradigm point of view when conducting research based on their educational background, environment and intellectual ability so that they can have a philosophical point of view and stand on the shoulder of the giants when conducting research. Therefore, in conducting research, researchers, especially those related to the social sciences, should be aware of this multiparadigm concept if they wish to touch on other fields

which, although relevant to economics, management or accounting. But one thing that should be realized is that our background working in the field of economics, and business at the Faculty of Economics and Business, which we all love, is different from what is understood by academics from other faculties because it is in line with the scientific views of research in the field of social sciences, especially business, that multiparadigm research is needed so that the researcher and the direction in which the researcher goes in choosing the stages in the design of his research methodology can become a bridge that unites the two different parties (Jillbert et al., 2012).

As a final suggestion, exploring multidisciplinary issues according to the title of this article certainly requires certain behaviours. Sensitivity including patience, tolerance, desire and openness to criticism and challenges will be needed to achieve the understanding needed to build a model for adopting IT innovation in general, especially innovative digital marketing transformation systems by the challenges of the circular economy century according to a quote from Aanestad (2011, page 27) as follows:

"I argue that we should not only orient ourselves to the future by looking forward to the yet unrealized. When researching the future, we should also develop a sensibility to the durability of our past and present creations, and understand how they impact the scope for future innovations."

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