Diffusion of Innovation Model of New Services Offerings in Universities of Karachi

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ABSTRACT

Purpose: This research study aims to investigate the influence of adoption of new major/specialization in the universities of Karachi, Pakistan.

Methodology/Sampling: Using students' sample, this research test the relationship of selected variables i.e. Relative advantage, Observe-ability, Trial-ability, Compatibility and Complexity with the behavior of students in adopting a new major/specialization.

Findings: The study significantly reveals that the students performing well are looking for innovative majors and accepting new major as a challenge. The results show that that the relative advantage, compatibility, trail-ability, complexity and observe-ability are positively correlated with the adoption of new major.

Practical Implications: Diffusion of innovation model is a useful predictor of students enrolling in new major areas of study. The findings are helpful for academicians, bureau of curriculum and other institutions to design and market new academic programs.

Keywords: Diffusion, Innovation, New Services Offerings, Karachi.

JEL Classification: I21, I23.

1. INTRODUCTION

Many organizations develop and market innovative products to meet the needs of their present and potential customers. Despite the fact that over 30,000 novel products are introduced every year, customers want continuous supply of unique products (Crain &keith, 2004). For developing novel and innovative products in the long run and maximizing profits, companies are striving to seize a unique advantage (Engardio& Faith, 2002). Services are being influenced by advancements in technology therefore improved communication online education programs are growing. In order to meet the needs of students, online education is being offered by the universities across the world. Online education is not yet the only innovation that universities are offering, universities are offering new majors in changing market scenario to meet changing needs of their students.

Students have been provided with latest knowledge in rising career fields according to communication, information and technological changes through new majors launched by the universities. In order to capture larger base of students, new majors must be attractive for students so that they may continue their studies with the new major. For developing a new major in university, faculty members must be dedicated because they know what is changing in market and in academic and corporate research. As the faculty plans and develops course contents that are to be imparted to the candidates pursuing new major therefore faculty members need to be equipped with up to date technology and have access to research journals. In addition, developing the content that is parallel to designing and development of product in business market, a new invention can also be made in the academic world by imparting class room instructions like supply chain. Universities are working hard on identification of students who are willing to adopt new majors and focus on the potential students through extensive promotional efforts to get enrolled in these new majors. Effective communication between prospective students and seniors students is critical because it is a source of attracting more students.

According to (Cooper, 1993) many of new products and innovations have been observed to fail even in introduction stage due to lack of research. Those institutions which have carried out preliminary investigation for the success of new academic program have thrived. There are two essential areas in success of any innovation; one is the dimensions that can affect the adoption and other is the diffusion of innovation that an individual endorses. Different studies are available on the area of adoption process of innovations but this research study has evaluated the relationship among consumer characteristics i.e. relative advantage, compatibility, trial-ability, complexity and observe-ability.

Adoption process consists of five basic steps i.e. knowledge of innovation, persuasion, judgment, execution and confirmation. In this context (Rogers, 2003) discussed that the adoption of new product (innovations) was a vast research area which focused on topics such as the innovation's characteristics, the innovation's adoption rate, influence of the social network and the characteristics of the innovator. (Rogers, 1962) introduced the second phase of adoption process persuasion with five factors as complexity, observe-ability of an innovation, compatibility, trial-ability and relative advantage that could influence the adoption of an innovation. Product innovativeness has three dimensions i.e. product newness to customers, new product uniqueness and product newness to the firm. This research has taken five dimensions; complexity, observe-ability of an innovation, compatibility, trial-ability and relative advantage from persuasion phase and course innovativeness from student's point of view.

1.1. Problem Statement

Education field pertains to service sector that requires innovative services and techniques to respond to the prevalent volatility of environment. This study analyzes students and their decisions to adopt new majors. This type of research has extensively been carried out in developed countries and rarely applied in developing countries like Pakistan. The changing philosophy of specialization in the present era, universities attempts to reach their target students quickly and make strategies to retain them and also explores the factor(s) which are most appealing or influence the students. Major/specialization innovativeness was studied from different perspectives such as uniqueness of course, new to the university and new to the candidates' in combination by different researchers. The argument in this study was to identify the variable(s) of innovativeness from customers' perspective and complexity, observe-ability of an innovation, compatibility, trial ability and relative advantage that led to an increase in new major/specialization adoption with opinion that these have a positive relationship.

2. LITERATURE REVIEW

2.1. Adoption Process

The diffusion process explains the rate at which adoption occurs through time and space. Adoption process defined in the business dictionary as the five stage process through which customer becomes loyal or rejects it (Wikipedia). These stages are awareness, interest, evaluation, trial and adoption or rejection. At the first stage the prospective customer becomes aware of product with limited information. At second stage, prospective customer became interested to get more information about product. At third stage, prospective customer becomes able to evaluate that the product is beneficial or not. At fourth stage, customer becomes able to decide to purchase product first time to try. At the last stage, customer becomes able to decide whether to adopt or reject product.

The diffusion model and its process has a variety of factors that should be considered, including features of the new product; whether it is a merchandise or facility, adopter; whether it is an individual or organization and ecological and societal composition impacting adopter and individual influence (Rogers 2003). The relationships between items that affect adoption of product are critical and depend on diffusion rate. The service or product being adopted depends on the model of adoption and diffusion processes.

Product adoption model was developed by (Rogers, 1962) which included the stages of awareness, interest, evaluation, trial and adoption. In response to these concepts (Robertson, 1971) proposed AIDA (attention, interest, desire and action) model. Whereas (Rogers & Shoemaker, 1971) re-classified adoption process as knowledge, persuasion, decision and confirmation. Further they also theorized that adoption process is an intellectual procedure through which an individual moves from initial awareness about existence of new product to a conclusion of adoption or rejection. (Hepner, 1967) has characterized each stage of process by certain criteria and actions of potential adopter. The process was composed of a stimulus, interpretation of the stimulus and the consumer's response to stimulus. The

interpretation usually occurred during the stages of the adoption process and was made in terms of individual's past experiences and future expectations.

In interpreting the stimulus, every consumer does not necessarily go through each of the adoption stages. An individual could see a new service/product and move directly from awareness to trial. The (Rogers, 1962) named the time period required by a person to pass through adoption procedure from knowledge of product till its adoption as the adoption period. For practical purposes, the adoption period was measured from first knowledge of product to subsequent adoption or rejection. After that (Rogers & Shoemaker, 1971) referred to the adoption period as innovation-decision period and characterized it as a development phase in which fresh thought was growing in individual's mind.

This short decision period has categorized by Robertson (1971) as the "non-rational/ innovation" situation which could best be compared to impulse buying. He also theorized that with a favorable attitude about a service/product, an individual was more likely to go from awareness to trial without intervening stages.

2.2.   Adoption Categories

Like the stages of adoption process, adopters were categorized on observations and abstractions. These categories were used mostly as guides for formation of theories. (Rogers, 1962) has reported in study that most diffusion studies which have classified adopters into categories by the time of adoption, have asked the consumers to recall when consumers began adopting service/product. Later on, Rogers & Shoemaker (1971) in their study mentioned that innovativeness is standard for adopter categorization and the time in which an innovative product is adopted is a determinant of customer innovativeness and categorization of consumers into adopter categories

Rogers (1962) has described that the time at which the service or product was adopted represents the rate of adoption as the normal probability curve. Few individuals adopt an idea first then more followed by a sharp increase and finally level off when most of consumers have adopted idea. Since the time of adoption could be in days, months or years, the designation of time parameters for categories has been difficult to establish. A majority of the population may adopt some products within a few days and other products within several years.

Rogers & Shoemaker (1971) discussed in the study that innovators were the first to try and to adopt new ideas followed by the early adopters, who were a more integral part of the social system. The early majority consisted of those members of the community who adopted innovative services/products earlier than the average members, while the later majority approached a new idea with caution and had not adopted until a majority of the population had done so. The laggards were suspicious of new services or products and were the last to adopt those.

Rogers (1962) & Robertson (1971) report that individuals who were first to adopt an innovation usually had more risk capital, and were more willing to try and to adopt new services/products. Robertson (1971) theorized that price was not an attribute which influenced the early adopters to buy a service/product. However Rogers (1962) stated that the individuals who were early service/product purchasers were more venturesome and willing to assume risks when buying new service/products. (Robertson, 1971) has discussed that the

early adopters were constantly trying to maintain social position, the perceived prestige and satisfaction obtained from a service/product were reasons for service/product adoption.

Rogers & Shoemaker (1971) have further discussed that the late adopters were more cautious, conservative members of the social system and usually adopted a service/product because of economic necessity. These late adopters were unwilling to assume risks and this was theorized by Robertson (1971) as that the late adopters usually restrict the purchase of goods and service which they consider were easy to use and which offer a material or economic advantage. It was concluded from the research of Rogers and Robertson that early adopters were worried with quality and prestige obtained from a goods or service, whereas late adopters were concerned over price, convenience and material advantage of goods and service.

2.3   Characteristics of Innovation

This module appraises the existing literature with respect to the five major distinctive features of innovation which comprise relative advantage, observe-ability, compatibility, trial-ability and complexity (Rogers, 2003). Rogers believes that it is the recipients' individual recognition and interpretation of the characteristics and not the characteristic itself as identified by experts that actually influences the rate of adoption. As it is in case of beauty, innovations lie only in the eye of the observer and it is the observers' understanding of the characteristic that affects observers' attitudes (Rogers, 2003). Similarly, according to (Hiltz& Johnson, 1989) these major key features have a capability to gauge the tendency towards adopting an innovation and to keep the prospective adopters and non adopters of distinct technologies apart.

2.3.1.   Relative Advantage

The extent, to which an innovation is perceived to be better than what it is in reality, is termed a*s* relative advantage (Rogers, 2003). Relative advantage thus influences adoption of individual decisions.

2.3.2.   Compatibility

According to Rogers (2003) "compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters"

2.3.3.   Complexity

The extent to which an innovation is perceived as complicated to understand and use is termed as complexity (Rogers, 2003). Numerous researches indicated that complexity has critical impact on user's intention about adopting new technology. Agarwal & Prasad (1997) were found opposing this study, they found role of perceived voluntariness and innovation characteristics in the acceptance of information technologies and found no correlation between ease of use and Internet technology

2.3.4. Trial-ability

It is general assumption that individuals who have the chance of trial-ability of the innovative products generally adopt it unlike those who do not try. In this way potential adopters are more confident to go for innovation because of the hope that they are likely to meet what they expected (Agarwal & Prasad, 1997), (Rogers, 2003), (Tan &Teo, 2000). "Trial-ability is the degree to which an innovation may be experimented with on a limited basis" (Rogers, 2003).However, in context of the course, trial-ability can be considered as the aptitude to attend the classes on experimental basis. Consequently, the reservations and doubts regarding adopting that particular course as a new major will diminish (Henrichs, 1995).

2.3.5. Observe-ability

Results of observe-ability which are noticeable to others are observe-ability (Rogers, 2003). In addition, he indicated that less complex, highly observable and relatively advantageous innovations are adopted easily than others. Similarly, Henrichs (1995) established that relative advantage and observe-ability were highly correlated with the early adoption of the technology. In the course context, it can be gauged by examining knowledge of people regarding the benefits, public media such as newspapers or TV could be beneficial for gaining the knowledge. Rate of adoption should increase if the knowledge about the benefits is easy to gain. Consequently, it is found that observe-ability does influence the adoption.

2.3.6. Hypotheses

In the light of the literature review and research objective of this study, the following hypotheses were developed:

H_1: Relative advantage is the predictor of new major/specialization adoption

H_2: Compatibility is the predictor of new major/specialization adoption

H_3: Complexity is the predictor of new major/specialization adoption

H_4:Trial-ability is the predictor of new major/specialization adoption

H_5: Observe-ability is the predictor of new major/specialization adoption.

3. METHODOLOGY & RESULTS

An instrument was developed to test the content and validity for this research. A survey was conducted to investigate the key influencing factors towards new major adoption among students in universities of Karachi, Pakistan. It further analyzes the relationship between new major and their adoption. To achieve the objective of this study a sample of 250 respondents was selected. The sample comprised of students from University students, Government and private universities in Karachi are taken in the presence of researcher to ensure interaction and clarification (if any). Out of 250 respondents 134 were male and 116 were female which shows 53.6% and 46.4% respectively. Completed questionnaires were collected from the

respondents' and data was entered in computer software. Finally the SPSS 17.0 was used for the estimation and analysis of the results.

3.1.   Respondents Profile

A survey was conducted on a developed instrument comprising four dimensions were mentioned about relative advantage, five dimensions for compatibility, three dimensions for trial-ability, four dimensions for observe-ability and three related to complexity. The information about the demographic factor gender of the respondents was collected..

3.2.   Descriptive Statistics

The descriptive statistics shown in Table 1 of the instrument for relative advantage, compatibility, trial-ability, observe-ability and complexity variables with mean and standard deviation which provided the guidelines for further investigation/ testing of quality of means and variance.

Table 1

Descriptive Statistics

Gender	Sample Size	Relative Advantage		Compatibility		Trial-ability		Observe-ability		Complexity	
		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
Male	134	4.12	.057	4014	.058	4.25	.05	4.21	.046	4.13	.059
Female	116	4.11	.049	4.189	.052	4.18	.058	4.18	.051	4.1	.054

3.3.   Findings & Interpretation of Results

The five hypotheses were constructed in the light of the literature review. To test each hypothesis one simple t test technique was applied. The descriptive table displays the sample size, mean, standard deviation, and standard error for each of the five variables. The sample means disperse around the 4 standard (agreed level).

Table 2 shows that there is no significant difference in all independent variable means i.e. Relative advantage, compatibility, trial-ability, observe-ability, complexity. Thus, the mean of trial-ability and observe-ability are slightly higher than the rest of three variables.

Table 2

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Relative Advantage	250	4.118	0.6112	0.03866
Compatibility	250	4.1656	0.62448	0.0395
Trail-Ability	250	4.2187	0.60358	0.03817
Observe-Ability	250	4.2	0.54423	0.03442
Complexity	250	4.1227	0.64563	0.04083

To test hypothesis that Relative advantage is the predictor for new major adoption one sample t test was applied and the results are present in table 3. The sig value is .003 which is less than .05 are significant meaning that there is a influence of relative advantage on adoption of new major of study so the hypothesis that relative advantage is the predictor for new major adoption is accepted.

To test hypothesis that compatibility is the predictor for new major adoption one sample t test was applied and the results are present in table 3. The sig value is .000 which is less than .05 are significant meaning that there is influence of compatibility on adoption of new major of study so the hypothesis that compatibility is the predictor for new major adoption is accepted.

To test hypothesis that trial-ability is the predictor for new major adoption one sample t test was applied and the results are present in table 3. The sig value is .000 which is less than .05 are significant meaning that there is influence of trial-ability on adoption of new major of study so the hypothesis that trial-ability is the predictor for new major adoption is accepted.

To test hypothesis that observe-ability is the predictor for new major adoption one sample t test was applied and the results are present in table 3. The sig value is .000 which is less than .05 are significant meaning that there is influence of observe-ability on adoption of new major of study so the hypothesis that observe-ability is the predictor for new major adoption is accepted.

To test hypothesis that complexity is the predictor for new major adoption one sample t test was applied and the results are present in table 3. The sig value is .003 which is less than .05 are significant meaning that there is influence of complexity on adoption of new major of study so the hypothesis that complexity is the predictor for new major adoption is accepted.

Table 3
One-Sample Test

	Test Value = 4					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Relative-Advantage	3.053	249	0.003	0.118	0.0419	0.1941
Compatibility	4.193	249	0	0.1656	0.0878	0.2434
Trail-Ability	5.728	249	0	0.21867	0.1435	0.2939
Observe-Ability	5.811	249	0	0.2	0.1322	0.2678
Complexity	3.004	249	0.003	0.12267	0.0422	0.2031

4. CONCLUSION, IMPLICATIONS & RECOMMENDATIONS, LIMITATIONS AND FUTURE RESEARCH

4.1. Conclusion

The study significantly reveals that the students performing well are looking for innovative majors and accepting new major as a challenge. In this way universities are attracting brighter and intelligent students by advertising the new majors and trying to gain maximum return and thus, achieve higher rate of enrolment over time. The results show that that the relative advantage, compatibility, trail-ability, observe-ability are positively correlated while complexity is negatively correlated with the adoption of new major/specialization. It is evident from the results that universities offering innovative courses enjoy higher market share. The results in the research have highlighted that there are significant differences between new major area of study (educational) and perceived dimensions of information systems innovations. Indeed, the latest major innovation is considered to be more multi dimensional.

4.2. Implications & Recommendations

Universities have made academic innovations so as to cater to the needs of the contemporary students. While making these innovations, they have introduced new majors like Bio Informatics and Media Sciences, etc. Students should be attracted with successful major program of study and therefore student forums should be organized.Marketers have a plenty of opportunities available to them because according to the research studies carried out in the context of Diffusion of Innovation, the possibility as to whether an individual will or not and when to adopt an innovation is influenced by personal characteristics of the adopter. Thus, diffusion of innovation model is a useful predictor of students enrolling in new major areas of study.

This study aims to investigate the key influencing factors towards diffusion of innovation model among students at universities of Karachi, Pakistan. It was found that there are numerous factors which influence the innovation model adoption.

It is recommended that universities which are going to launch a new major programs should enroll the students who have had a sound academic background since it was found from the study that high performers are bent upon adopting new major offer and in this connection the universities should also adopt an effective pre entry test to ensure the right students are on roll.

4.3. Limitations

This study had some limitations. Un-restricted-probability sampling technique was used and results were limited to be generalized as compared to random sample. The sample size was limited to two hundred and fifty respondents. This research has been conducted only in one metropolitan city of Pakistan i.e. Karachi therefore, a broader sample comprising different cities of Pakistan may depict the entire picture of the panorama. The comprehensive amalgamation of quantitative and qualitative methods, besides the structured questionnaire, can be employed to get in depth and insightful response from the respondents.

4.4. Future Research

There are certain untouched issues in this study which provide an opportunity to potential researchers. For generalization of result of the study random sample design with large sample size should be taken. Future research should address scale refinements based on results of studies of both business and non-business majors at other universities all over Pakistan.

Only gender as a demographic factor has been analyzed whereas other demographic factors were held constant i.e. income, educational background, aptitude and culture etc. So a research study on the aforementioned variables may depict a clearer picture of the scenario.

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