# Influential Factors of Software Firms' Performance in the Industry of Developing Countries

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- Keywords: Radical Innovation, New Product Advantage, Customer Unfamiliarity, Hypothesis Model, Marketing Performance.
- Abstract: This research focuses on the factors that influence the manner in which profoundly innovative businesses develop new products. A sample size of 96 individuals, including managers, software developers, marketing officers, and proprietors, was chosen to respond to a questionnaire containing twenty inquiries regarding the organization's marketing strategy, the benefits of the new product, and the level of consumer awareness regarding the product. Using a structured questionnaire, the authors gathered data for this study from a sample of 27 companies engaged in the development of software marketing products and services. The result illustrates the benefits of novel products, which are associated with the product's radical nature and business performance. Personal interviews, phone interviews, and Google Forms surveys collected data on organizations' new product marketing tactics and consumer reactions. Drawing upon previous research on product innovations, this study presents a theoretical framework that establishes a connection between the radicalness of product innovation, market performance, and internal and external relations characteristics of organizations.

SCIENCE AND TECHNOLOGY PUBLICATIONS

# **1 INTRODUCTION**

Radical marketing is a strategic strategy that distinguishes a firm from its competitors by defying traditional marketing rules and using fresh, imaginative tactics. Radical marketing entails risk-taking, creativity, and the implementation of an unusual approach. Unlike standard marketing tactics, qualities, or strategies, radical marketing develops its own protocols.(Etim et al., 2021).

One of the most difficult challenges in radical marketing is establishing a strong and long-term connection with customers in Dhaka, Bangladesh. This necessitates a focus on communication, trustworthiness, and the capacity to recognise and serve customer needs. In situations when resources are limited, busi-

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nesses must be willing to stray from traditional marketing and advertising practices in order to differentiate themselves from competitors. Unlike traditional advertising, which tries to reach a broad audience and charges a flat cost regardless of results, radical marketing provides more precise audience segmentation and performance measurement based on goals. This enables businesses to direct a part of their marketing budget towards channels that provide concrete results. To assess whether or not to use an innovation process while launching a new product to the market, weigh the advantages against the adoption costs. Customer unfamiliarity has a negative mediation impact, while the advantage of a new product positively mediates the association between product radicality and firm performance. Businesses must carefully analyze what their product is made of, how it might benefit customers, and which consumer criteria it targets and serves(Almasarweh et al., 2019).

Software firms in Bangladesh have significant marketing performance gaps, and bringing a new product to the market is a crucial but often overlooked business activity. Firms may develop and de-

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ploy unique goods that differentiate them from competitors and result in long-term profitability by scrutinizing empirical facts and providing an original perspective on the issue. Thus, radical marketing may be characterized as a strategic strategy that deviates from traditional marketing conventions while using fresh approaches. It requires a steadfast commitment to establishing long-term consumer relationships as well as a willingness to diverge from conventional marketing and advertising practices. Companies may design and execute successful marketing strategies that result in long-term success by carefully examining the benefits of innovative products and understanding customer desires.

### **2** LITERATURE REVIEW

Marketing performance measurement is an essential domain for organizations to ascertain the efficacy of their marketing strategies and the correspondingly high return on investment. In this scholarly article, which examines a book and influential articles pertaining to marketing performance measurement, the principal findings and recommendations are highlighted. The limitations of their findings and the data acquisition methodologies utilized in the studies are also addressed by the authors(Jain, ). There was a study that looked at how action direction and market perception affect the effectiveness of advertising for service-oriented businesses in Ghana. The results of the study show that improving marketing performance depends on how action direction and marketplace sensing work together(Riswanto et al., 2020).

Another study looked at how market-oriented Indian software companies are and whether companies that are new also do better at what they do. The study says that for businesses to be profitable and last, they need to focus on marketing and be able to come up with new ideas(Noh and Fitzsimmons, 1999). The third study looked at the link between market mindset and marketing success in the food service business of West Java Province, Indonesia. It did this by using innovation as a bridge. The study's results show that smart marketing needs both knowledge of the market and new ideas(Etim et al., 2021).

An additional study looked at how information technology affected marketing in the Korean service sector. It found that marketing activity, efficiency, and competitiveness were all improved in three areas by using IT(Hacioglu and Gök, 2013). According to a survey of 187 businesses, the export process is influenced by industry-specific factors, domestic and foreign client loyalty, and niche market targeting, as opposed to the psychological or geographical proximity of export markets(Bell, 1995).

A research investigation explored the influence of interaction orientation and marketplace sensing capabilities on the marketing performance of serviceoriented organizations operating in Ghana. The re- search discovered that interaction orientation and market sensing interact in a critical manner to enhance marketing performance(Kankam-Kwarteng et al., 2021). Additionally, another study looked into how marketing knowledge might improve the marketing skills of selling companies from emerging economies that work in developed markets. The study found that market response was one of the most important factors that led to better marketing success in developed markets(Khan and Khan, 2021).Experts believe that business intelligence has a positive impact on knowledge, experience, decision-making criteria, and export performance based on a study that looked at the connection between business intelligence and firms' international activities and software exports to Paraguay(Neubert and Van der Krogt, 2018).Five Bangladeshi businesses' marketing performance was ultimately evaluated in a study that examined the impact of big data. According to the study, big data concepts are unpopular among marketers in Bangladesh, despite the fact that their adoption would improve marketing performance(Jobaid and Jabin, ).

The ride-sharing softwares affects social, economic, sustainability and environmental concerns with specific emphasis on elements that determine company performance. These businesses adjusted their software marketing during the COVID-19 epidemic to attract the retain clients using a combination of qualitative and quantitative methodologies. Safety became top priority during that time with special marketing being key factors in attracting and satisfying customers(Islam et al., 2023). The studies highlight the importance of several factors in achieving marketing success, such as innovation, market orientation, information technology, marketplace sensing, interaction orientation, and big data. However, the study has limitations such as the use of crosssectional data, small sample numbers, and difficulties in proving causal links. Further study is required to fully comprehend marketing performance measurement(Bag et al., 2021).

Last but not least, a study looked into how big data affected the marketing results of five Bangladeshi companies. The study found that marketers in Bangladesh don't use big data ideas very often, even though doing so could help their campaigns do better(Hajela and Akbar, 2013). In a different study, a model was made that shows how entrepreneurial marketing, economic edge, and marketing success are all connected. The study found that entrepreneurial marketing and economic edge have an effect on how well marketing works(Hidayatullah et al., 2019).

### **3 HYPOTHESIS DEVELOPMENT**

#### A. Competitive Mediation

In recent times, the integration of innovation into business strategies has grown in significance, owing to its pivotal role in fostering competitive advantage and sustained expansion. By introducing new products or services, developing new technologies, or employing new business models, organisations are perpetually searching for effective methods of innovation and maintaining a competitive advantage(Yasa et al., 2020). Such items are more likely to succeed, gain market share and be lucrative. Achieving an early-mover or first-mover advantage is a fundamental incentive for businesses to engage in innovative practices. Organisations can attain market leadership and acquisition of market share by being the pioneers in the introduction of novel products or services. This is particularly accurate regarding radical innovations, which entail the launch of novel products, environments, or technologies. By providing substantial price and performance enhancements in comparison to established products, radical innovations have the potential to confer a competitive advantage(Hacioglu and Gök, 2013). Nonetheless, the implementation of a revolutionary advancement is not without its own array of obstacles. Unfamiliarity on the part of customers with the novel product or technology may impede its adoption. Specifically, inadequate product information may impede customers' comprehension of the product's attributes and advantages, thereby introducing elevated degrees of uncertainty and risk. Notwithstanding these challenges, the relative advantage of a product over its competitors positively impacts the adoption of novel products. This advantage may be derived from the product's superiority, unique benefits for the consumer, high quality, or a reasonable price. Products that attain success, marketability, and financial profitability are those that surpass the expectations of consumers through the fulfilment or resolution of their requirements. Existing research has established a correlation between the success of innovation and the firm's or organization's performance, with the former benefiting the latter. Early adoption of the product can contribute to the establishment of the organization's objectives, thereby enhancing this performance. Furthermore, the benefit

of the novel product positively influences the sense of brand value and brand loyalty among consumers in the business-to-business sector, potentially enhancing the performance of the organisation.

Therefore, we have predicted the following hypothesis:

**H1:** Product radicality and firm performance are positively mediated by the advantage of the new product.

**H1(a):** Product radicality and advantage of the new product are strongly correlated.

**H1(b):** Firm success is strongly correlated with new product advantage.

The term "product radicalization" denotes the extent to which an innovative technology is integrated into a novel product. Because the revolutionary element of the innovation is either new-to-market or new-tothe-world, it is possible that consumers are not yet acquainted with the product. Particularly in the B2B sector, this unfamiliarity may generate greater levels of risk and uncertainty, impeding the adoption of new products(Hacioglu and Gök, 2013). Thus, the research has demonstrated that unfamiliarity with the client is associated with increased risk and uncertainty, which impedes the adoption of new products, especially in the B2B context.



Figure 1: Theoretical Model.

Consequently, business consumers exhibit a greater aversion to risk, thereby diminishing the likelihood of their acquiring revolutionary new products. The aforementioned has an adverse impact on the seller's enterprise. Furthermore, customer unfamiliarity necessitates that organisations introducing revolutionary products allocate resources towards customer education and training with the aim of altering customer perceptions(Carmona-Lavado et al., 2020). In conclusion, the success of radical innovations may be significantly impacted by the timing of product introduction. Before the market is prepared or the technology has been completely developed, introducing a revolutionary new product too early can result in high costs and low adoption rates. On the contrary, the introduction of a revolutionary product belatedly,

subsequent to the establishment of competitors in the market, may lead to overlooked prospects and diminished market presence. Given these factors into account, we put forth the subsequent hypothesis:

**H2:** Unfamiliar Customers and the Impact on the Relationship among Product Radicalness and Firm Performance.

**H2(a):** Positive correlation between the radicalness of a product and the level of unfamiliarity experienced by customers.

**H2(b):** The performance of the firm is negatively affected by customer unfamiliarity.

#### **B.** Moderated Mediation: Manufacturing Industry vs. Service

There are substantial disparities between the manufacturing and service sectors regarding innovation strategies, which have an impact on their respective market performance and levels of success. The innovation process is rendered more intricate due to the intangible, heterogeneous, inseparable, and perishable nature of service industry offerings. As an alternative, the manufacturing sector consists of patentable tangible goods, and innovation is frequently predicated on groundbreaking developments that demand substantial investments in research and development. This is because ongoing developments generate a greater quantity of user interactions, which facilitates a more efficient and expeditious product market fit. Additionally, the adoption of agile methodologies, including spiral developments, is more probable in the services sector as opposed to the manufacturing sector. This accelerates the process of transforming the new offering into a competitive edge and ultimately contributes to the success of the organisation.

**H3:** The impact of product radicalness and novel product advantage on firm performance is contingent upon the industry in which the company operates, with service enterprises generally experiencing a more pronounced positive influence. To alleviate the adverse effects of consumer unfamiliarity, service-dominant organisations allocate a significantly greater proportion of their research and development budget towards incremental advancements as opposed to radical ones(Yasa et al., 2020).

In service industries, where inseparability connotes the concurrent provision and utilisation of services and necessitates a greater degree of collaboration in a business-to-business context, the impact of product radicalness on customer unfamiliarity is comparatively diminished.

Having a significant degree of client interaction dur-

ing the commercialization phase enables adaptability by customising the service to meet the specific needs of each client, which ultimately leads to increased levels of customer satisfaction and loyalty. In conclusion, consistent human involvement throughout the implementation stage facilitates innovation acceptance by promoting comprehension of novel concepts, raising awareness of their advantages, and reducing the need for extensive training. Innovation improves customer relationships in a business-to-business context, but in the case of services, it is more pronounced by virtue of their inseparability, which compensates for clients' unfamiliarity.

**H4:** Service firms are less significantly impacted by product radicalness and customer unfamiliarity than manufacturing enterprises. Furthermore, the relationship between product radicalness and firm performance is mediated by the industry category. This disparity arises from the fact that the service sector places a higher value on ongoing innovation and gradual modifications, which customers readily embrace, in contrast to the manufacturing sector which is more prone to investing in revolutionary advancements that customers might not be acquainted with, thereby engendering resistance to adoption.

Thus, the manufacturing and service sectors adopt distinct innovation strategies: the former places a premium on incremental advancements and ongoing innovation, whereas the latter allocates resources towards potentially patentable technological revolutions. With a shorter time-to-market, service innovations are simpler to develop and implement than product innovations; service-dominant organisations have a shorter B2B development cycle time than productdominant enterprises. Additionally, inseparability intensifies service innovation, which helps to compensate for clients' unfamiliarity.

## **4 RESEARCH METHODOLOGY**

#### A. Sample and Data Collection

Information was gathered from modest software companies in Bangladesh that develop software applications and digital marketing services for the purpose of this investigation. These sectors have been acknowledged as a rapidly growing economic domain in Bangladesh, which incorporates cutting-edge components into its operational framework. This study consulted twenty-seven software companies based in Bangladesh, including those that were recently established in the industry. Information was collected from a heterogeneous cohort of staff members, comprising project managers, developers, marketing executives, and sales directors, all of whom were involved in the launch of innovative products or the redesign of existing ones pertaining to software, web, and other technical applications. The information gathered for this study comprised personal interviews, phone interviews, and Google Forms surveys. The surveys inquired about the approaches employed by the companies to inform consumers about their new products and elicited corresponding responses. The findings of this research may provide minor software companies in Bangladesh with insights into how they can increase their competitiveness through product innovation and marketing strategies. The data was gathered via telephone interviews and in-person consultations. Our primary emphasis was on utilizing Google Forms as a data collection instrument for the generated questionnaires. This study examines the manner in which companies communicate new products to consumers and the corresponding reactions they elicit.

Table 1: Participants Samples.

	Number of Companies	Proportion
Number of Employees (size)		
0 - 10	7	25.93%
11 - 20	8	29.63%
21 - 30	3	11.11%
31 - 40	5	18.52%
Above 40	4	14.81%
Age (In Years)		
0 - 5	15	55.55%
6 - 10	6	22.22%
Above 10	AN 6 TE	22.22%
Industry		
Manufacturing	20	74.07%
Services	7	25.93%
Total	27	100%

Table 1 further on the details of sample characteristics and dispersion. The sample and the population of workers in the participating software businesses did not significantly vary from one another.

#### **B.** Measurements

The items of the scale, along with their standard factor loadings and reliability indices, are detailed in Table 2. The median values for the initial measurements of each variable, as estimated for a sub-sample of 27 companies: product radicalness (26), customer unfamiliarity (20), new product advantage (27), and firm performance (25). Consequently, singular scores were computed for each construct and company through the process of averaging the scale elements provided by multiple respondents. Like previous research, this study examined innovation practices that have occurred within the past five years. The evaluation of every independent factor and mediator

was conducted utilizing a Likert scale ranging from 1 to 7.

**Product Radicalness:** The degree of radicalness of respondents' new or considerably upgraded products/services were in the past five years.

**Customer Unfamiliarity:** The grade for Avlonitis and Salavou's newness to customers was changed.

**New Product Advantage:** We modified the new product uniqueness scale developed by Avlonitis and Salavou(Yasa et al., 2020). This measure's items correctly capture the concept of a new product advantage.

Firm Performance: Utilising the six-item subjective measure that Zahra devised, business performance was assessed. On a scale of one to seven, the respondent's level of satisfaction with the firm's achievement of a specific goal was assessed for each inquiry. The weighting of the questions was determined by the perceived significance of the objectives. Because both importance and satisfaction were evaluated using a seven-point scale, the aggregate index ranges from 1 to 49(Yasa et al., 2020). By conducting discussions with the companies involved, we were able to ascertain the industry type and the age of the firm, which facilitated the generation of this information. By conducting discussions with the companies involved, we were able to ascertain the industry type and the age of the firm, which facilitated the generation of this information.

#### **C. Measurement Analysis**

As the evaluation instruments were formulated subsequent to an extensive literature review pertaining to the research constructs, their content validity can now be affirmed. The variables being examined are represented in Table 2 with Cronbach's alpha, composite reliability (CR), and average extracted variance (AVE).

### **5 RESULT ANALYSIS**

Instead of using more traditional methods, process analysis was chosen as the best way to test hypotheses when the independent and dependent variables have conflicting impacts. (Yasa et al., 2020).

Product Radicalness (PR), Customer Unfamiliarity (CU), New Product Advantage (NPA), and Firm Performance (FP) were the variables under investigation. SFL is Factor loading.

SFL = Factor Loading, AVE = Average Variance Extracted, CR = Composite Reliability,  $\alpha$  = Cronbach's

Construct	Scale Item	SFL	Alpha	CR	AVE
Product Radical- ness	Regarding the new or significantly improved products/services launched by the company in the previous five years, it can be say that:		0.827	0.16	0.43
	PR_1: They were based on a revolutionary change in technology	0.786			
	PR_2: They were a breakthrough innovation	0.735			
	PR_3: They led to products that were difficult to replace with substitutes using older technology	0.808			
	PR_4: They represented a major technological advance in the subsystems	0.686			
	PR_5: They represented a minor improvement over the previous technology	0.540			
New Product Advan-	NPA_1: They offer more possibilities to customers	0.770	0.841	0.56	0.86
tage	NPA.2: They cover more customer needs NPA.3: They have more uses NPA.4: They offer unique, innovative features to customers NPA.5: They are of higher quality	0.775 0.791 0.793 0.580			
Customer Unfamil- iarity	CU_1: They required a major learning effort by customers	0.792	0.792	0.011	0.015
	CU_2: It took a long time before customers could understand their full Advantages	0.820			
	CU_3: The product/service concept was difficult for customers to Understand	0.637			
	CU_4: They were not known and tried in the market	0.663			
Firm Per- formance	FP_1: Return on investment	0.805	0.819	0.014	0.063
	FP_2: Return on equity	0.814			
	FP_3: Sales growth	0.822			
	FP_4: Net profit margin	0.796			
	FP_5: Market share	0.816			
	FP_6: Return on assets	0.801			
Industry	0 = Manufacturing 1 = Service	N/A			
Firm Size	Number of employees	N/A			
Firm Age	Number of years since the firm was founded	N/A			

Table 2: Scale item, factor loading, and convergent validity.

#### Alpha

Here, we decided that 1 = Totally disagree, 7 = Totally agree for every part of the questionnaires. Note: All factor loadings exhibit significant statistical significance label: 0.01.

Because process analysis works well in situations where the independent and dependent variables are subject to conflicting effects, it was chosen for this inquiry over more traditional alternatives for hypothesis testing. This study investigated the following variables: PR, CU, NPA, and FP & SFL (Factor Loading).

The assessment of the measurement instruments' reliability was conducted utilising Cronbach's Alpha (alpha) and Composite Reliability (CR). Convergent validity was evaluated using the Average Variance Extracted (AVE)(Yasa et al., 2020). On a scale of one to seven, respondents indicated their degree of agreement with each statement. Significant factor loadings were observed for all variables at the 0.01 level.

PR = Product Radicalness

CU = Customer Unfamiliarity

NPA = New Product Advantage

FP = Firm Performance.

The findings of this study suggest that a product's radicalness affects performance in two ways: favorably, via the mediation of unique product benefits, and adversely, through customer unfamiliarity. Process analysis was selected as the best approach for investigating these two opposed routes.

As hypothesised in H1 and H2, we examined the effect of two competitive intervening factors on the relationship between radical product innovation and firm success in this study. The results of our

Table 3: Exploratory Factor Analysis.

	Factor 1	Factor 2	Factor 3	Factor 4
PR_1		0.786		
PR_2		0.735		
PR_3		0.808		
PR_4		0.686		
PR_5		0.540		
NPA_1	0.776			
NPA_2	0.775			
NPA_3	0.791			
NPA_4	0.793			
NPA_5	0.580			
CU_1				0.792
CU_2				0.820
CU_3				0.637
CU_4				0.663
FP_1			0.805	
FP_2			0.814	
FP_3			0.822	
FP_4			0.796	
FP_5			0.816	
FP_6			0.801	

Table 4: Standard Deviation.

	Standard Deviation
Product Radicalness	4.380
Customer Unfamiliarity	3.920
New Product Advantage	4.099
Firm Performance	4.710
Industry	2.074
Firm Size	5.196
Firm Age	9.192

study offer evidence in favour of both Hypotheses 1a and 1b, suggesting that the relationship between firm performance and product radicalness is influenced by the benefit of new product and client unfamiliarity. Additionally, we have noted a negative correlation between client unfamiliarity and product innovation, which subsequently affects business performance negatively(Noh and Fitzsimmons, 1999).

Table 5: Correlation Matrix.

	1	2	3	4	5	6	7
Product Radicalness	1						
Customer Unfamiliarity	0.510	1					
New Product Advantage	0.385	0.212	1				
Firm Performance	0.287	0.342	0.318	1			
Industry	-0.09	-0.171	0.564	0.636	1		
Firm Size	0.995	0.979	-0.189	0.961	0.327	1	
Firm Age	1	1	-1	1	-1	1	1

Additionally, it can be stated that the client's ignorance and the commerce of assiduity concerning the radical sound of the product were both substantial. In a manner similar to the preliminary direct effect, a basic pitch analysis was performed on H4. The precision of the product reduced the client's ignorance during production, but the effect was negligible when it was served.

We can affirm that both H2a and H2b are supported, as per our analysis. In addition, the results of the bootstrapping analysis reveal that the circular effect is statistically significant at 0.03, which provides additional support for H2(Noh and Fitzsimmons, 1999). Subsequently, we employed the process analysis methodology, more precisely the averagecentric function in PROCESS, to examine the mediating effect while considering the industry-specific circumstances. Hypotheses H3 and H4 posit that the influence of product radicalness on firm performance is moderated by the category of industry via the two intervening variables.

A significant correlation was identified between the category of industry and the combined effect of customer unfamiliarity and product radicalness. A straightforward slope analysis was performed for H4, following a methodology similar to that of the indirect impact. Based on the results, it was observed that product radicalness positively impacted consumer unfamiliarity, albeit with a relatively weaker effect in the service sector.

# 6 CONCLUSIONS

Through an examination of the effects of radical innovation in products on the performance of software enterprises based in Bangladesh, this research contributes to the existing literature on marketing performance. The research demonstrates that radical product innovation has two contradictory effects on firm performance: a positive impact mediated by the innovative product's benefit, and an adverse effect mediated by consumer unfamiliarity. Additionally, the research reveals that product radicality has a more negative effect on consumer unfamiliarity in the industrial sector than in the service sector.

It is essential to note, however, that the findings of this study may not be applicable to other nations, as the research was limited to Bangladeshi software companies. Consequently, it is imperative that forthcoming investigations delve into distinct categories and impediments to innovation, alongside sales and marketing tactics employed by software firms based in Bangladesh. Moreover, conducting research on these variables in different nations may yield a more holistic comprehension of the ramifications of radical innovation in products on the performance of businesses. In general, the findings of this study carry significant implications for enhancing the marketing efficacy of software companies based in Bangladesh. Through gaining an understanding of the impact that radical innovation in products has on the performance of businesses, organisations can formulate tactics to minimise the adverse consequences of consumer unfamiliarity while capitalising on the favourable outcomes of the new product's advantage.

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