The Influence of Information Technology on Innovation Processes for Software Production in Kosovo

EMIN NEZIRAJ & HUSNIJA BIBULJICA (Correspondent author)
Department of Business Administration,
University "Haxhi Zeka"- Peja , Kosovo
Address: Peje, Eliot Engel
KOSOVO
Authors Email: emin.neziraj@unhz.eu, husnija.bibuljica@unhz.eu

Abstract: - This paper will focus on innovation processes created by information communication technology. The paper discovers the relation of information technology in software and not software product service industry in innovation processes across their effect in the Middle and Big Enterprises (MBE-s) in Kosovo. The main objective of the study was to recognize the level of usage of the new technology, respectively the new information technology in Kosovo. The scientific methodology used in this work is the quantitative methodology with the deductive approach since it is intended to support the existing theory over the information technology and innovative processes.. The results of this study shows, the influences of information technology in innovation process with p=0. 23. (MBE-s) should take appropriate steps to develop and improve new technologies by creating long-term policies and strategies derived from market needs.

Key-Words: - Information technology, Innovation, Business, Produce sector, R&D

1.Introduction

In the fast-changing business world today, innovation in information technology has become the mainstay for every serious organization. Innovation in ICT has become increasingly complex due to changing customer needs, extensive competitive pressure and rapid information technology change. The main purpose of the research is to construct. An analytical framework for applied the software and create link between innovation and new products in ICT by produce sector in Kosovo. In other to do this, it is necessary to analyze innovation ICT processes in the produce sector of Kosovo and finding new forms of measurements ICT indicators on innovation processes. [1](Innovation created by information technology is the driving force of economic development for every country and company. Doing business with constant innovation generally leads to changes in the business process and ultimately increases efficiency in production and service units [2]. Kosovo as a state is trying to follow the trends of western markets even though the state on this issue is a lot less favorable compared to the markets of developed countries. Any serious company within its business sector (financial, IT and others) has a sector for research and development [3]. The world economy has changed due to the greater development of information technology and enterprises is forced to survive in a modern global market economy characterized by the competition, the short life cycle of products and diversity of products. Many enterprises have difficulty in understanding the new information cause of their poor concept of investment, especially in information technology and modern management [4].

The innovative activity presents one of the main activities for the achievement of the organizational success of the enterprise, and for the overall and inclusive economic development of the country [4]. Nowadays, enterprises are not only required to do imitations but also to do adaptations and innovations in order to face market competition and market turbulence.

The main objective of this study was to show the positive relation between. Variables of information technology innovation with all business activity. In the productive sector of Kosovo as a SEE country. This study gives Us the that all business must in their daily activity apply innovation in business processes in order to respond to customer demands.

The hypothesis is: H1 The quality of innovative ICT in production industry, which depends on business activities and innovate effectively.

H2 The effects of the investments in increasing the innovative technology in Kosovo Enterprises. To

test the hypothesis, we used the following statistical tests.
Also, regarding the paper's research question which is the level of placing technology innovation the production sector field sector, which in Kosovo is very low. Is very low. is very low in relation to other seas, OECD countries is in rapport 1:80. "The empirical evidence on ongoing south - south exchange shows that the surge of economic growth in developing countries, particularly emerging countries, has been made possible in large part by their growing technological capabilities. This is reflected in the increase in their capital goods imports in recent times. Although capital goods imports by developing countries are growing, and are considered to be an indication of technological leaning, the trends show that a large share of the capital
This paper strongly recommends that the state government policy must be oriented on increasing the innovation by giving the extra foundation for research and development for all business if they want to be part of development countries. Furthermore, and businesses must have a special sector for research and development on the way to create new product and services.

2 LITERATURE REVIEW

2.1 Application of IT in business innovation actives

When it comes to the application of IT technology in enterprises, the countries of Southeast Europe are lagging behind the countries of the European Union, especially when it comes to companies that carry out production. However, when it comes to the financial sector, the situation is much different. The financial sector is generally adequately equipped with information technology, and because of investments to come from countries of the European Union, mostly from Austria, which has invested heavily in the banking sector across the countries of South Eastern Europe [7]

Information network today covers the entire globe, entering every house, every factory and a social institution, linking land vehicles, aircraft, ships and every individual. At the same time, computers are in large banking systems, industrial complexes and traffic management as well as in washing machines, cars and toys [8]
The five main areas in which information technology completely changed the former life of work are [9]:

• Information technology as a replacement for the calculator (Excel)
• Information technology as a substitute for the typewriter (Word)
• Information technology as a substitute for the archive (database)
• Information technology as a substitute for television (graphics and multimedia)
• Information technology as a substitute for the catalog (WWW)

Nowadays, the most common business data is processed on the computer, but the old ways of exchanging business information and documents in paper format are kept as well. If the capabilities of an existing computer and telecommunications are exploited in the right way, could greatly improve performance whilst reducing costs, providing better service, better services and reduce the errors that occur in the work in the traditional manner. For the ordering of goods or services via traditional ways, orders will be printed and mailed to the supplier, invoice is prepared, printed, and sent to the customer, and payment is made via check. Over 75% of all business documents printed by one organization are manually transcribed into a different organization [10]. When the e-mail began being used in the mid and late '60s, relatively few people had been computer trained. It is therefore not surprising to find that e-mail was dramatically overrun by fax, in the '80s. The reasons were the ease of use, simple delivery of images and graphics, and input printed forms (forms, etc.). Today, with the ubiquity of computers, the advantages of e-mail are enormous, as it's been demonstrated by its fast-growing use. In addition to digital benefits, e-mail is a conversational medium. Even if it's not a spoken dialogue, it is much closer to speech than writing [11].
Managing the development and operations of the modern economy shall be based on an efficient system of information on international and national markets and the market environment, as well as the capabilities of the business system on this basis

[12]. The system information allows selection of optimal solutions in decision-making and reducing risk and uncertainty when you turn in the international exchange and the division of labor by detecting the legality of the international and national markets and the market environment. The impact of information technology on business performance is reflected in the quality of information, control, planning, to management and decision-making. It is important to point out two kinds of impact of information technology on the quality of the company as follows:

• Direct and easily measurable impacts - direct impacts include savings in resources (labor, materials, energy), time savings and simplification and streamlining of a business process in the company.

New technologies are the foundation for new products, and provide a better connection with customers. The use of information technology is increasingly used in the formation of new products and services. Its main role is in changing business relationships, as well as the improvement of business activities within the company [13]. New forms of information services (electronic ordering, buying at a distance, etc.) allow the implementation of a quality business [1]). Of course, this technology in countries is slowly starting to take on an important role in communicating on a relation producer-buyer. In this way, the current "traditional" manufacturers are becoming multimedia representatives of information using the Internet or own a commercial database. It must be kept in mind that information technologies have a number of advantages that are reflected in efficiency of organization ([9]:

• Modernization of business activities by reducing the number of employees,
• Better financial operations of the company,
• Rational use of capacity, resources and energy,
• Quality distribution of materials, goods and services.

This all affects the improvement of the situation of companies in the business. Information technologies significantly change the competitive prospects of all business processes during the manufacturing process, but also in the process of service delivery companies (Bovée, L. C. i Thill, V. J., 2011) . The application of information technologies and the development of management information system enterprise, have a key role in achieving maximum effects of process reengineering.

Business logic creates the need for restructuring of a company, causing the need for the distribution of information, which requires infrastructure, which exists in some form, but it is necessary to connect and modernize, although it does not matter how we do it. The development of information technologies has enabled the emergence of the computer as the proponent of the decision [3] (. The computer receives a personal "intelligence", knowledge and manner of use of this knowledge, however, can do the decision-making process. All phases of the decision-making process, including now and the selection phase, carried out using a computer (software packages). So, at this level, computers (on the basis of a computer program, information and knowledge) have the role of proponents of decisions that a person can accept or not to accept [6]. (.

In order for a business system to define your goals and focus its activity on their realization, it is necessary to have a system of information, which provides the necessary inputs for the normal functioning of the business [11] (. The harmonization of market conditions with the abilities and skills of the business system is the primary condition for planning objectives, policies and strategies as well as for the development of appropriate plans and programs of the business system. In the business system, information system provides: collecting data from sources in the business system and outside it, classification, coding and indexing of data from the source system in the business and outside it, storing and updating data, retrieving stored data, data processing, interpretation of information, making reports and the distribution of decision-making bodies.

Information Systems not only provide information for planning, execution and control, but also performs a number of other creative and technical tasks that are performed in the classical system of organizational functions of planning and control and so brings significant changes to the organizational structure and management system. [14] Investing in the development of information technology should always be correlated with the aim of increasing efficiency and effectiveness of operations and business systems.

2.1.1 Enterprises and their innovation activities

The innovative activity presents one of the main activities for the achievement of the organizational success of the enterprise, and for the overall and inclusive economic development of the country [7]. Nowadays, enterprises are not only required to do imitations but also to do adaptations and innovations in order to face the market competition and market turbulence. In order to achieve such a success, enterprises initially need to make investments in Research and Development of new products and services, which means bringing innovations in market.

Innovation is seen as the main leader toward productivity of the enterprise. Innovation helps businesses to improve the way the products and services are produced and distributed, or to present totally new products in the market.
Researches show that 12% of circulations of the SMEs in EU come from the new products and services or from the visibly improved products and services . Data show that innovative enterprises have a better performance and a faster growth rate compare to non-innovative enterprises. Innovation is well defined as a successful utilization of ideas - or turning the ideas into profitable products, processes, services, or business practices. Thus, nowadays enterprises need to be more innovative each day.

Some of the characteristics of an innovative enterprise are: the open approach and the orientation toward changes, which represent the condition for the highest scale of innovation inside the enterprise. The main factor of the innovative enterprise and its strategic resource of innovation is her competitiveness. The qualities of competiveness are [4]:
- Orientation toward market and positive attitude toward changes in technology
- Acceptance of the risk, and tolerance of mistakes during the application of innovative technology
- Development of the employees in using technology
- Maximal decentralization
- Intense communication
- Network structure, team work, and flexibility
- Application of integration mechanisms in the structure of the enterprise

Modern Enterprise uses different organizational mechanisms to encourage and support innovations. The main mechanism is the R&D sector, which is the eldest organizational mechanism, to encourage innovations within the enterprise, to development new products, and to improve existing products. The formation of this sector offers the enterprises the opportunity to take the advantage of competition through sophisticated solutions based on advanced technology. This sector enables the enterprises to:
- Manage the basic researches in the framework of strategic aims of the enterprise
- Manage the long term research projects which are consistent with strategic aims of the enterprise
- Keep the pace of technology-scientific progress which can be considered by enterprises as an opportunity or a threat. [14]The management of basic researches is necessary for the enterprises because each time they are required to be competitive with products and services with the aim of accomplishment of long term existence strategy. Thus, enterprises that understood that only innovative solutions can survive them should make the efforts to manage the process of research and development to the highest qualities. The qualitative management depends on the long-term projection of the process in accordance with strategic plan of competition of the enterprise. In addition, the projection of the consistent process with the strategy of the enterprise should internally foresee the technological progress and use the advanced technology in order to have more alternatives for the opportunities for the creation of the success and productivity of the enterprise through R&D and creation of new products and services.
[11]. Until now, the studied associated with the relation between information technology and productivity of the enterprise have shown positive impact on business or enterprise operations [12]. Thus, it is especially important for the enterprises to be competitive in the market and to base that competiveness in the innovative advantages mainly in the below industries: automobile industry, airplane-air, as well as other industries such as clothing industry, agriculture industry, and other industries. Every enterprise, no matter its form and size, makes market positioning bases on innovative products [15].

3 METHODOLOGY

The scientific methodology used in this work is the quantitative methodology with the deductive approach because it is intended to support the existing theory over the information technology and innovative processes. This work communicates the comparative methods as well as the cause and consequence method, as it would be desirable to highlight the comparison of innovative processes or

the presentation of innovative products and services between the enterprises that produce the software and those that do not produce it, which means other producers. Then, there is an analysis in order to see the impact and causes in innovation processes that are occurring in the above-mentioned industries. The quantitative data that are used in this work are taken from the Kosovo Agency of Statistics and have to do with the progress of the innovative processes and information technology in Production Enterprises in Kosovo. Statistic methodologies are used for the analysis of the variable frequencies, the analyses of the correlation, and the analysis of the regression of the variable, categories that have to do with innovation processes through information technology.

3 ANALYSES AND DISCUSION

Hence, the research variables are the business activities, Innovation in communication, information and technology, innovative activities are a business entity performed in the period of 2010-2018, EI and Investment in innovation. The hypothesis is:

H1 The quality of innovative ICT in production industry, which depends on business activities and innovate effectively.

H2 The effects of the investments in increasing the innovative technology in Kosovo Enterprises.

To test the hypothesis, we used the following statistical tests:

1) One-Way Anova;
2) The Spearman correlation coefficient.
3). Regression analyses.

Table. 1 Markets that have placed technological innovation in the field of production and services as well as software industry

Business Activity	Kosovo %	Europe %	World %
S	8,4	14,6	18
P	0,3	2,2	5,6

Source: Adapt from www.oecdraportof question regarding the placed technological innovation data from year 2015 and Statistical online data from ASK 2018.

The table 1 shows that in Kosovo are placed at a low level of technology on the market in comparison to companies in Europe and the rest of the World.

Table 2. Testing the equality of proportion when it comes to product innovation between companies in their field

ovation in COMMUNICATION ORMATION AND CHNOLOGY	The business sector											
	Manufacturer Software			Services Software			Trade Software			Total		
	0	1	2	0	1	2	0	1	2	0	1	2
nputer based system [electronic transfer]	61	3	6	10	0	0	59	2	9	86.67%	3.33%	10.00%
cient energy utilization	62	3	5	9	0	1	65	2	3	90.67%	3.33%	6.00%
lity, standard and product ification	55	6	9	10	0	0	62	2	6	84.67%	5.33%	10.00%

Source: Data base of the study

The above table shows that there are very small investments in innovations related to communications and information technology in Kosovar enterprises. Hence, it can be concluded that production companies are those that have a very small investment in IT compared with trading companies which invest in IT the most. Thus, enterprises in Kosovo invest 10% in innovations within the information systems, 6% innovations in energy efficiency, and 10 % in the quality of products based on ICT. The following table shows that the innovation activities that are implemented by production companies in general, in a seven-year period.

Table 3. The value on innovation activities in enterprises in Kosovo

Investment in innovation	Industry	Mean (000)	Sdev
IRD R&D	S	7986,69	
	P	928,26	
ERD R&D	S	2181,65	
	P	701,14	
AM	S	3293,2	
	P	31866	
AEKAIA	S	1164,17	

	P	163,31	
Total	S	14625,7	
	P	33658,71	

Source: Data base of the study

The results in the following table show the effects of innovation through the companies that produce software as well as the ones that do not produce software. The results will be expressed in the modality of the percentage of the respective categories as mentioned below. The characteristics of the results are that respective companies that produce software are more efficient in the category of innovation rather than those who do not produce, however, also companies that do not produce respective software have a significance of the innovation category since that also they use some respective innovation

Table 4. The modality average of the effects of technological innovation between companies in Kosovo

EI	Industry	% Modality average
IRPS	S	48,88
	P	43,86
ROPP	S	50,65
	P	38,95
IINMIMSH	S	52,8
	P	31,8
IQPS	S	62,08
	P	50,05
IFPS	S	58,1
	P	37,85
TIPC/VS	S	49,6
	P	38,08
RLCUP	S	44,05
	P	36,48
RCMEUP	S	25,33
	P	35,9
REI	S	35,9
	P	12,58
IHSE	S	25
	P	38,63

Source: Data base of the study

The results shown in table no. 5 firstly reveals the increase in the number of product or service Gama of the software enterprises in Kosovo is evaluated moderately high by 48.88%. In the same category of variables, from the side of the other producers, the increase in the number of product or service Gama is evaluated with 43,86%. Hence, it can be concluded that Kosovo producers make satisfactory growth of their products or services. The second category of the innovation, which is the replacement of old products/process by software producers is happening in 50,65% of the cases. Other producers, is happening in 50,65% of the cases. Other producers have made many product/service replacements expressed at the rate of 38,95%. Considering the above data, it can be concluded that the production sector in Kosovo bases its processes in the replacement of the products in the proportion of 1:3, or around 54% of producers do not do the replacement of products or processes compare to 46% which do the replacement. The third category, which is the category of software producers which have difficulties in new market penetration and difficulties in increasing the market share, is evaluated 52,8%. This percentage shows that nearly half of software producers have problems with new market penetration that are more open compared to other producers which are evaluated with 31%, which means that around 69% of other producers consider the new market penetration as their major difficulty. The following category reveals that the percentage of quality improvement of the products and services from the perspective of software producers and other producers. Hence 62,08% SP (Software Producers) improve the quality of their products each year compared to 50,05% of OP (Other Producers) that do the same. Regarding the product/services flexibility, increase rate, in the perspective of software producers, we have 58,1% increase rate compares to 41,9% which do not do the increase. On the other hand, other producers 37,85% increase the flexibility in production/services (Table 3). The data presented at the table, show that performance of innovation activities has been intensified in the software industry. Finally, we can conclude that regarding the results we have large effects of innovation in two different fields, but the S has a bigger business intensity than P.

4.1 Discussion Analyses

In order to have the best representation of the aforementioned categories and variables, in the following table we will see the correlation of analysis. In this table, it is intended to highlight the relationship through the coefficient of correlation. The line of Correlation Analysis is in the service to base the hypothesis testing.

Table 5. The correlation of research variables of EI and R&D

			IRPS	ROPP	INNIM	IQPS	IFPS	IRD	ERD	AEKAI	AMS
Spearman's rho	IRPS	Correlation Coefficient	1,000	,257*	,264*	,218	,607**	-,068	,579**	,397**	,364
		Sig. (2-tailed)		,041	,035	,083	,000	,595	,000	,001	,003
	ROPP	Correlation Coefficient	,257*	1,000	,365**	-,784**	0,000	,913**	,200	-,157	-,784
		Sig. (2-tailed)	,041		,003	,000	1,000	,000	,113	,216	,000
	INNIM	Correlation Coefficient	,264*	,365**	1,000	-,556**	,169	,217	,641**	-,514**	-,654
		Sig. (2-tailed)	,035	,003		,000	,182	,086	,000	,000	,000
	IQPS	Correlation Coefficient	,218	-,784**	-,556**	1,000	,331*	-,656**	0,000	,218	,667
		Sig. (2-tailed)	,083	,000	,000		,008	,000	1,000	,083	,000
	IFPS	Correlation Coefficient	,607**	0,000	,169	,331*	1,000	,247*	,649**	,130	0,000
		Sig. (2-tailed)	,000	1,000	,182	,008		,049	,000	,306	1,000
	IRD	Correlation Coefficient	-,068	,913**	,217	-,656**	,247*	1,000	,211	,120	-,621
		Sig. (2-tailed)	,595	,000	,086	,000	,049		,094	,343	,000
	ERD	Correlation Coefficient	,579**	,200	,641**	0,000	,649**	,211	1,000	-,312*	-,408
		Sig. (2-tailed)	,000	,113	,000	1,000	,000	,094		,012	,001
	AEKAI	Correlation Coefficient	,397**	-,157	-,514**	,218	,130	,120	-,312*	1,000	,582
		Sig. (2-	,001	,216	,000	,083	,306	,343	,012		,000

The above table initially shows the positive correlation between the increase of Gama of the products and the increase of flexibility in products and services with coefficient of 607**. However, something to be concerned about is that companies make fewer investments in research and new product development, shown by the negative correlation with IRD and ERD since the correlation between IRPS with IRD is -068, and correlation of IFPS and IRD is -. 101. Secondly, the improvement of products and services is a positive correlation with the purchasing of machinery, equipment's, and computer programs, with coefficient of ,667, which enables us to conclude that the improvement in the quality of products and services is done through computer hardware and software. Hence, the result of aforementioned quality is -582**. In two other cases, we may have the basis to approve H1 – there is a low level of investments in Research and Development of innovative activities in Kosovo, and H2 the investments in innovative technology improve the relation between innovation effects and information technology in Kosovo's enterprises. In continuance, we will show the results of the correlation of research variables analysis of this paper. Moreover, the paper will closely show the correlation between variables.

Table 6. The main correlation of crucial research variables

Variables		BA	ICIT	IAP	EI	II
BA	Correlation Coefficient	1,000	,555**	,309*	,336**	,146**
	Sig. (2-tailed)		,000	,013	,007	
ICIT	Correlation Coefficient	,555**	1,000	,067	,123	,326**
	Sig. (2-tailed)	,000		,601	,331	,211
IAP	Correlation Coefficient	,309*	,067	1,000	,309*	,109**
	Sig. (2-tailed)	,013	,601		,013	.004
EI	Correlation Coefficient	,336**	,123	,309*	1,000	,049**
	Sig. (2-tailed)	,007	,331	,013		.224
II	Correlation Coefficient	,146**	326**	,109**	,049**	1,000
	Sig. (2-tailed)	,211		.004	.224	

Table 7. The model testing summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,596[a]	,355	,311	,58222

The above model reveals that the independent variables can forecast the depended variables by 59,6%, or more exactly 35%, because R Square is ,355. According social sciences the accepted model is also the model that can show the results are not

lower than 100. Based on this conclusion, that model can be used to test this phenomena of innovation influences to the information technology. Further, we will show the values of regression model coefficient results.

Table 8 The coefficients value of the testing model

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	ICIT	,500	,325		1,536	,130
	BA	,750	,178	,750	4,207	,000
	IAP	-1,250	,309	-,870	-4,048	,000
	EI	,500	,252	-,348	-1,983	,052
	II	,545	,325	1,043	4,609	,000

B0 Coefficient in our case Bicit tells the strength of depended variable ,500 with accuracy of ,130. B1-Bba tells that business activities are affected and depends on 75% by innovation in ICT, considering its value of ,750 and sig ,000. The depended variable in the 2010-2017 period of Table 9. Anova model of testing model

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Vendimet strategjike	Between Groups	6,000	1	6,000	6,571	,014
	Within Groups	42,000	46	,913		
	Total	48,000	47			
Vendimet taktike	Between Groups	112,667	1	112,667	235,576	,056
	Within Groups	22,000	46	,478		
	Total	134,667	47			

innovation activities do not affect the depended variable, because innovation happens often within

the year and this variable should only show the results of a one-year period.. The innovation effects have impacts on ICT innovations with the accuracy of ,052 and variability of 50%. The innovation investment variable effects the forecasting of ITC innovations, shown through variability of 54,5 and sig, 000.

Thus, the model of regression and its values can be used in the work of hypothesis testing. Hence, by derivation, we devised the following formula with the following Hypothesis-testing formula :Impact IT in Innovation = 0,500+0,750-1,250+,500+,545.

Value f 6,571 for H1 The quality of innovative ICT in the produce industry dependent on business activity and innovative effectiveness shows p 0,014. The hypothesis is approved

Value of 6,571 for H1 The investments in innovation, technology increased innovation effects in Kosovo Enterprises. Show p 0,056. The hypothesis is approved.

5 CONCLUSION

The business environment in Kosovo is becoming more and more turbulent because of rapid development in information communication technology, and technology in general. No manager could neglect the impact of such development on their industry or organization. In such business environments, imagination, creativity, innovation and courage become more and more important as it becomes evident that there is no general rule for success.

In the ever-changing business world, innovation in ICT and in general technology has become a mainstay of every organization. The nature of global economic growth has been changed by the speed of innovation in ICT, which has been made possible by rapidly evolving information technology and technology in generally, shorter product lifecycles and a higher rate of new product development.

The need for organization to innovate and to gain better innovation...” or say “to benefit from innovation in ICT is stressed throughout the innovation and information communication technology in general literature. This need comes from increasing competition and customer demands. ICT innovations involve new working methods, new ideas, new products, new processes, new forms of organization and new management.

In this paper, the objective has been to find the positive relation between variables innovation of information technology with all business activity in the produce sector of Kosovo as a SEE country. This study gives us the knowledge to confidently recommend that all business should in their daily activity apply innovations in their business processes as a way to respond to customer demands. Furthermore, regarding the paper’s research question, which is the level of placed technology innovation In Kosovo’s production sector field is very low, and in relations between other SEE and OECD countries, the rapport is 1:80. This paper strongly r recommends that the state government policy must be oriented towards increasing innovation by providing extra foundational opportunities for research and development for all business if they would like to be part of developed countries and their economies.. Businesses must have a special research and development sector in order to create new products and services for research and development on the way to create new product and services.

Ultimately, the fundamental recommendation of this paper is that public and private organizations should take appropriate steps to develop and improve new information technologies by creating long-term policies and strategies derived from market needs.

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