

# Development of Information Technology Organizations for Financial and Strategic Management of Startup Projects

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## Abstract

This paper researches the development of organizations working in the field of information technology in the system of financial and strategic management of startup projects. The proposed probit regression model allows to assess and predict the development of future startups based on modeling the productive behavior of organizations working in the field of information technology. The productivity of the organization is the best indicator that determines the quality of financial and strategic management system. A probit model approach is offered in which productivity is defined as a close correlation of the factors in the organization. A probit regression model confirms that the staff motivation, staff capacity, quality and variety of products, productivity of product are important indicators that reflects the organizations' productivity. On the basis of the model, managers will have an opportunity to select the effective startup projects. This knowledge is important for investors, stakeholders and other financial entities or individuals who want to invest in the development of information technology.

## Keywords <sup>1</sup>

Organizations, Information Technology, Financial and Strategic Management System, Startup Projects, Probit Regression Model

## 1. Introduction

The development of the state is due to continuous social change, the rapid development of information technology, increasing the level of technical support of production, high rates of development of science and technology. At the present stage of development of market relations, organizations in the field of information technology operate under the influence of various negative factors, which requires organizations to constantly seek new opportunities and apply new methods of financial and strategic management. The policy of financial planning and strategic management of organizations is an integral part of the policy of development of organizations. This policy should address many challenges.

The development of the information society, modern technologies, e-government systems is a condition and at the same time a prerequisite for the formation of the economy of a new technological order. It is based on the production and use of knowledge, social and political, economic and technological integration. Modern information technologies represent fundamentally new opportunities for improving the quality of life of the population.

At the present stage of economic development, organizations in the field of information technology play an important role. Foremost, they carry out the following activities: development, modification, testing and technical support of the software, planning and design of integrated computer systems that combine hardware, software and communication technologies; management and maintenance of

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computer systems of clients and data processing, other professional activity in the field of information technologies.

Progressive foreign experience must be used for the effective development and competitiveness of organizations in the field of information technology. It concerns the issue of intensifying investment and financial processes and the search for new advanced technologies. Startup is one of the modern types of organizations in the field of information technology.

A startup (startup company) is an organization that is at the development stage and builds its business either on the basis of new innovative ideas or on the basis of newly emerging technologies. The term «startup» is especially often used in relation to Internet companies and other organizations working in the field of information technology. However, this concept extends to other areas of activity.

The most successful foreign startups are: social network Facebook; Wikipedia is the largest online encyclopedia; YouTube is the largest database of videos; Flickr is one of the most popular services for storing photos; Twitter is a platform for exchanging short messages. Other classic examples of successful startups are Microsoft, Apple Computer inc. and Google.

The main features of organizations working in the field of information technology: organizations are created through investment (limited own funds); organizations have a rapid pace of development (on average three to four months); startup includes: innovation (curiosity, uniqueness of the idea); organizations are risky (according to statistics, 70% of startups die in the first year); participants of startups are mostly young people; organizations have the ability to adapt to market needs. The main functions of the financial and strategic management policy are the preparation of proposals to determine the main directions for the introduction of modern management techniques and practices, priorities and a plan for financing start-up projects. Important tasks are the preparation of proposals for the organization and implementation of productive startup projects.

Today there is a need for constant management of organizations in the field of information technology, finding ways to influence strategic development and productivity in order to better financial planning and strategic management of new projects.

The proposed model allows organizations to assess and predict the development of future startups based on modeling the productive behavior of organizations working in the field of information technology.

The model also warns the investor about the expected performance of the project or the future state of its financial resources.

The methodological and theoretical basis of the article is the scientific works of domestic and foreign scientists, which reveal the issues of financial and strategic management, productivity management in organizations.

The survey is based on the following methods: a systematic approach to the study of the financial and strategic management system in organizations operating in the field of information technologies, and the performance of startup management; a deductive method to solve the problem of systematization of the internal environment factors that affects the productivity of the organization; regression analysis to solve the problem of creating the model of the influence of factors on the productivity of the organization and get an information about the level and quality of the financial and strategic management system in organizations; analytical method for assessing the state of financial and strategic management in organizations operating in the field of information technologies.

## **2. Related Works**

From the point of view of financial and strategic management, the organization should be considered in various aspects of its functioning, in the relationship and interdependence of its components. An important element of the financial and strategic management system is a study, measurement of performance.

The performance of the organization is a measure of the efficiency of the use of production resources (labor, finance, raw materials, energy, time, land, information, etc.) for the production of the necessary consumer in the number, assortment and quality of products or to provide services. The performance of the organization lies in the scope of study of the financial and strategic management. Performance shows the level and quality of the financial and strategic management system in the organization. That

is, performance shows how the decisions of managers to solve financial, material, energy, human and other issues can be better reflected in improving the organization's activities.

Mostly, scientists analyze the approaches of foreign and domestic scientists to form a set of methods for measuring the performance of organizations. They explore and justify the use of best practices for measuring the performance of organizations in the context of strategic management and financial planning. Researchers reveal the main problems in the implementation of the development strategy of the organization, explore the problems of management of the organization as a basis for the implementation of development strategy, argue the principles of performance management in financial planning and strategy implementation. They note that productivity management is an integral element in the strategic management and operational actions of managers and employees.

Heydari, Lai, Xiaohu have studied two window analysis (BCC, CCR) were used to explore the direction of performance changes in the Persian organizations. Information has been received from organizations through the implementation of interviews for decades. The total reliability of the survey was carried out by using statistical estimates and indicators [1]. The following factors based on expert assessments were used in the model for assessing the productivity of organizations: job satisfaction, job attitude, job attachment, organizational commitment and organizational climate.

Hoye, Misener, Naraine, Ordway [2] developed a set of equations for estimating the strategic management of organizations. The number of bankrupt organizations and organizations that continued their activities was determined. Based on the data obtained, it is hypothesized that each organization has the same tendency to bankruptcy. This tendency is equal to the ratio between bankrupt and non-bankrupt organizations. In his study, the author examined the impact of different factors on the activities of organizations. The author constructed a logit regression equation for different forecasting horizons.

Krishnan [3] research is based on a sample of young organizations (startups). The author describes the experience of creating startups, gives a clear methodology for how new projects are created. The researcher gives a full understanding of the organization and management of startup projects, assessment of projects for their effectiveness and productivity, risk assessment of projects in the market.

One of the main components of the creation and operation of startups is to attract financial resources. Financing startups is a very problematic issue in the financial market of Ukraine. In the modern economic and financial domestic literature, there is no clearly formed unified approach to determining the composition of the financial support of startups. We divide these sources into: own and attracting investment (franchising; venture funds; tender; business accelerators; crowdfunding, state subsidies; IRO).

The strategic investor makes large financial investments in the development of startups. The strategic investor aims to earn a steady income, control over property and participate in startup management. Choosing a successful startup is an important point for the investor, because it depends on the future of the startup project.

We can note that the main problems of startup development in Ukraine are insufficient financial support from the state, narrow specialization of startups (mainly in the field of information technology); lack of a system of training qualified personnel.

There are already many startups in Ukraine and their number is growing every year, remaining attractive to foreign and domestic investors. At the stages of creating and developing startups, investors need information about which project will be productive and which will not be productive.

The article [4] discusses the ways for budgeting of startups in Ukraine. The choice of the way depends on the source of financing (grants, investor funds, loans, own funds, etc.), unique characteristics of the organizations, income. Financial costs in the strategic development of startup project have grown considerably over the past few years due to the next factors: consolidation of organizations working in the field of information technology, increased market competition. The author provides recommendations that will help to effectively allocate financial costs for the implementation of the startup, to improve the financial management of startups.

Lubin [5] has deeply researched the problems of startup management. These issues are not exhaustive, and allow identifying the main obstacles to the startup management, and to develop appropriate ways to overcome obstacles to the effective realization of the potential of startups.

Aluchna & Kaminski [6] proposed the following factors for the study of sustainable development of organizations: equity, loans, assets, net income, quality of management and economic conditions. The models were built for one- and two-year forecast horizons.

Hankiewicz, Weber [7] explore the system of producing organizational activities. The authors analyzed the subsystems of productivity, including efficiency, cost-effectiveness, profitability, effectiveness and quality of working life. The main factors that contribute to productivity increase are analyzed. The human factor is the most important in the process of increasing the productivity of the organization. The theoretical and methodological model of the productivity management process at the level of the organization and the country has been developed. The main problems in performance management of the organization depending on the subjects of analysis are also identified.

Huang, Hsiao [8] in their study used company as a research subject. They have created a performance management system of the company based on the applied Balance Scorecard. This research conducted interviews with each group representative of the company, the managers and staff members from different aspects of the company's activities. This study expects that the directions of the organization's activity can be translated into particular interventions to maintain its strategic competitiveness and financial stability.

Kumar and other scientists [9] analyzes the receipt of stable performance of organizations by balancing methods of strategic management, financial investment in new technology short-term profitability. The purpose of his study was to solve the issue of productive management of the organization in widespread use in the fast-growing industries and to examine their relationship to performance. The findings indicate that choices of methods of strategic and financial management can significantly affect performance of the organization. It thereby indicates which of the substantive aspects have the strongest and the lowest relationship with performance in the organization.

In recent years, scientists have paid considerable attention to the study of various aspects of financial planning, and performance management as an important element of strategic management. One of the problems is the imperfection of the tools for choosing the best options for management decisions in organizations. The variety of methods is based on the choice of different indicators that should be considered as indicators of productivity.

Thus, some foreign and domestic scientists in the analysis of performance management determine its components, which reflect individual issues of organizations, and then determine the means of influencing them [10], other scientists form a general list of indicators that most fully characterize productive activities in organizations [11].

The views of scientists in the areas of research on the productivity of organizations are quite different. Most researchers analyze the management of productivity of the organization through the prism of financial indicators, limited to financial management [12; 13]. Other scholars have linked productivity to develop strategy and strategic management [14].

Many researchers offer methods of selection and implementation of actions aimed at improving the productivity of organizations. Some of these techniques are aimed at using the latest methods of analysis and modeling to assess individual components of productivity [14], others involve the development of integrated evaluation indicators [11].

Work-based learning experiences, staff skills and capacity play an important role in the development and internal environment of organization. Training and monitoring the staff is critically significant to ensure successful implementation basics of employee motivation. The authors suggested carefully designed professional development activities that included training, field-based coaching, and performance monitoring [15].

Many authors discuss building staff capacity for achieving the goals and strategic plan of the organization. The authors address providing staff professional development on best practices through training, creating a contemporary performance-oriented and people-oriented startup [16].

The peculiarity of the organization is that the overall level of productivity depends on various factors. The degree and weight to which each factor influences the productivity depends on the quantitative and qualitative characteristics of the elements, as well as on their changes in the long run. However, the deterioration in the productivity of the organization is inevitably reflected in the activities of the organization and its elements.

Productivity is one of the most important parameters for assessing the success of the organization. The purpose of the organization working in the field of information technology is to increase or maintain the appropriate level of its productivity. This is a prerequisite for a stable market position, efficient use of resources, expansion of activities.

### 3. Methodology

Regression analysis as a tool of economic and mathematical modeling is the basis of the study. The regression analysis of a comprehensive analysis and assessments of the productivity of organizations in order to make informed decisions for the realization of successful and productive startup projects was implemented.

At the outset, it seems necessary to determine the relationship between productive and unproductive organizations working in the field of information technology, staff motivation and capacity, quality and variety of products and profitability of product in the organizations. The study used a quantitative factor - product productivity. Staff motivation and capacity, quality and variety of products are the results of expert evaluation.

The rates of productive and unproductive organizations working in the field of information technology can receive two values, 1 or 0. It provides an opportunity to design the probit regression model with which to predict the meaning of prebuilt variables in a little piece of time. The probit model allows to estimate the probability that the analyzed (dependent) variable will take the value 1 for given factor values.

**Table 1.**

Information for the probit model of a comprehensive analysis and assessments of the productivity of the organization (high productivity of organizations)

No	Productivity of the organization	Staff motivation	Staff capacity	Quality and variety of products	Productivity of product
1	1	9	8	9	0,32
2	1	10	9	10	0,3
3	1	10	9	9	0,32
4	1	10	9	10	0,29
5	1	9	9	8	0,27
6	1	9	8	10	0,25
7	1	10	10	9	0,33
8	1	9	9	8	0,31
9	1	8	9	9	0,26
10	1	9	9	10	0,32
11	1	9	8	9	0,28
12	1	10	9	9	0,27
13	1	8	8	9	0,29
14	1	9	9	9	0,3
15	1	9	10	10	0,31
16	1	9	8	9	0,28
17	1	8	9	8	0,27
18	1	9	8	10	0,29
19	1	10	9	9	0,31
20	1	9	8	10	0,27

The information was received through a survey held in the framework of labor market monitoring at the Department of Career Development and Business Cooperation of Ivan Franko National

University of Lviv in 2021. The research involved 64 business experts who work or have worked in the field of information technology. The main criteria for selecting business experts are as follows: competencies in the field of information technology, education and general experience, experience in the field of information technology (more than 10 years) and experience in the position, position. The calculated coefficients of competence in relation to experts, were in the range of 0,60; 0,83. These values correspond to the established normative values of competency coefficients. The Kendall concordance coefficient was 0,72 and also corresponds to the established normative values.

Tables 1 and 2 provide information for probit modeling, analysis and assessments the productivity of the organizations working in the field of information technology. The sample includes 41 productive and unproductive organizations.

Staff motivation and capacity, quality and variety of products were identified by survey in reach of 0 and 10. Productivity of the organization was identified as 1 or 0. The quantitative data (net income from sales, cost) on the economic activities of the organizations working in the field of information technology were identified from the survey. This data was used to estimate productivity of the product.

Probit model provides an opportunity to identify the productive group of organizations and involves the examining the likelihood that the organizations would be classified as a particular product group. The method of probit regression becomes necessary for a comprehensive analysis and evaluation of organizational performance.

**Table 2.**

Information for the probit model of a comprehensive analysis and assessments the of productivity of the organization (low productivity of organizations)

No	Productivity of the organization	Staff motivation	Staff capacity	Quality and variety of products	Productivity of product
1	1	5	3	6	0,06
2	1	5	5	4	-0,18
3	1	3	5	2	-0,22
4	1	5	4	6	-0,04
5	1	4	5	4	0,05
6	1	3	3	4	0,08
7	1	6	6	5	-0,15
8	1	4	4	5	-0,05
9	1	5	5	6	0,11
10	1	4	5	4	0,09
11	1	6	4	7	-0,3
12	1	3	3	4	-0,19
13	1	5	4	6	-0,23
14	1	6	5	6	0,06
15	1	3	2	4	-0,09
16	1	5	3	6	-0,11
17	1	5	4	5	0,1
18	1	4	4	4	-0,21
19	1	6	6	6	-0,16
20	1	5	5	6	0,03
21	1	4	5	3	-0,18

At first, we examined the impact of employee motivation on the productivity of the organization. To that end, a number of different meanings of employee motivation were imposed, and other factors kept constant. The impact of staff potential on the productivity of the organization was further investigated. However, employee motivation was left unchanged. And so, one after the other, we studied the impact of all factors on the performance of organizations.

The main way to obtain results during the probit model testing is to use the approach of alternate consideration of factors. The experience of using only quantitative indicators in modeling is well studied. It is much more interesting and useful to use both quantitative and qualitative indicators in modeling.

In our case, we took into account several qualitative indicators and one quantitative indicator. This allowed us to conduct a comprehensive analysis and assessment of the impact of staff motivation and capacity, quality and variety of products, and then productivity of product on the productivity of the organization through the probit model.

Probit model can be represented as follows [19]:

$$p(x) = P(Y = 1 | X = x) = \Phi(x^T a) \quad (1)$$

$$S(u) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^u e^{-\frac{z^2}{2}} dz,$$

where  $S$  is the integral function of the standard normal distribution,  $a$  is the unknown parameters [14].

The likelihood function is the foundation of the approach and expresses the probability density (probability) of the simultaneous appearance of the sample results  $Y_1, Y_2, \dots, Y_n$  [19]:

$$L(Y_1, Y_2, \dots, Y_n; \theta) = p(Y_1; \theta) \cdot \dots \cdot p(Y_n; \theta) \quad (2)$$

According to the maximum likelihood method, the value of  $\theta = \theta(Y_1, \dots, Y_n)$  that maximizes the function  $L$  is accepted to be in estimation of an unknown parameter. The calculation process is being simplified by maximizing not the function  $L$ , but the natural logarithm  $\ln(L)$ . It has to do with the fact that the maximum of both functions is achieved with identical values of  $\theta$  [20]:

$$L^*(Y; \theta) = \ln(L(Y; \theta)) \rightarrow \max \quad (3)$$

We do have a binary independent variable through probit model. Therefore, we denote the probability of occurrence of 1 ( $P_i = \text{Prob}(Y_i = 1)$ ) by  $P_i$ . This probability will depend on  $X_i$ , where  $X_i$  is the row of the regressors' matrix,  $W$  is the vector of regression coefficients [19]:

$$P_i = \Phi(X_i W), \quad \Phi(u) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^u e^{-\frac{z^2}{2}} dz \quad (4)$$

The log-likelihood function has the form:

$$L(Y, W) = \prod_{i=1}^n \Phi(X_i W)^{Y_i} [1 - \Phi(X_i W)]^{1-Y_i} \quad (5)$$

$\ln(L)$  was used in the simulation and the  $L$  function was replaced. The content of our task has not changed, but we have simplified the work and avoided multiplication:

$$L^* = \ln L = \sum_{i=1}^n Y_i \ln \Phi(X_i W) + (1 - Y_i) \ln(1 - \Phi(X_i W)) \quad (6)$$

To do this, we use the following symbols:

$$\begin{aligned} W &= (W_0, W_1, \dots, W_m)^T, \\ X_i &= (1, X_{i1}, \dots, X_{im}), \\ X_i W &= W_0 + W_1 X_{i1} + W_2 X_{i2} + \dots + W_m X_{im} \end{aligned} \quad (7)$$

We used an approach called the Newton-Raphson method to maximize the  $L$ . The iteration method was used to solve the problem:

$$W_{t+1} = W_t - \frac{\partial \ln L(W_t)}{\partial W} \left[ \frac{\partial^2 \ln L(W_t)}{\partial W \partial W'} \right]^{-1} \quad (8)$$

where

$$\frac{\partial \ln L(W)}{\partial W} = (f_0(W), f_1(W), \dots, f_m(W)) \quad (9)$$

$$f_0(W) = \sum_{i=1}^n \Phi(X_i W) - \sum_{\{i:Y_i=1\}} 1$$

$$f_j(W) = \sum_{i=1}^n \Phi(X_i W) X_{ij} - \sum_{\{i:Y_i=1\}} X_{ij}, \quad j = 1, 2, \dots, m \quad (10)$$

$$\frac{\partial^2 \ln L(W_t)}{\partial W \partial W'} = \begin{pmatrix} \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W)), & \dots & \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W))X_{im}, \\ \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W))X_{i1}, & \dots & \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W))X_{im}X_{i1}, \\ \dots & \dots & \dots \\ \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W))X_{im}, & \dots & \sum_{i=1}^n \Phi(X_i W)(1 - \Phi(X_i W))X_{im}X_{im} \end{pmatrix}$$

The following initial values had been defined as the direction of the linear regression options:

$$W^{(st)} = (X^T X)^{-1} X^T Y \quad (11)$$

The final stage of the analysis is the practical application of the method of conjugate gradients.

#### 4. Empirical results

To conduct a comprehensive analysis and evaluation of the productivity of organizations, the following indicators were used:

- $x_1$  – Staff motivation (as a result of an expert survey);
- $x_2$  – staff capacity (as a result of an expert survey);
- $x_3$  – Quality and variety of products (as a result of an expert survey);
- $x_4$  – Productivity of product (defined as the ratio of the net income from sales to the cost);

The characteristics of the received probit model in the STATISTICA environment are as follows (figure 1).

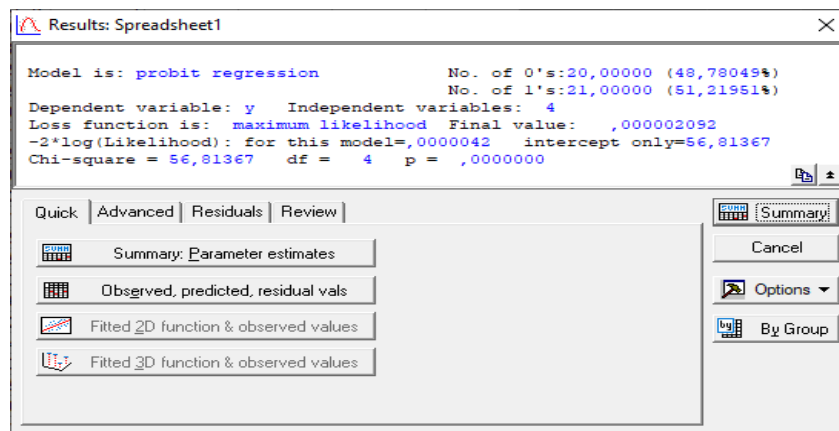


Figure 1: The characteristics of the received probit model in the STATISTICA environment



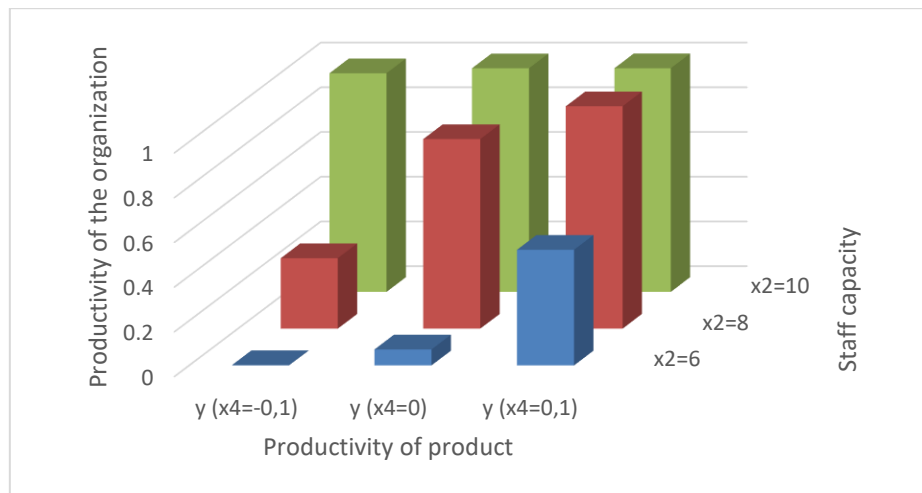
The four-factor probit regression model offers high reliability. Chi-square, which is equal to 56,8 is confirmed by calculations. The significance of Chi-square claims that the almost zero probability of not refusing the null hypothesis.

The analytical expression of the developed model will look like this:

$$P(y_i = 1|x_i) = \Phi(33,5 - 0,05x_1 - 1,25x_2 - 3,46x_3 - 15,08x_4) \quad (12)$$

The resulting equality can be used to conduct a comprehensive analysis and evaluation of the productivity of organizations with different values of the factors.

Figure 2 shows the dependence of the productivity of organizations when changing the factor  $x_4$  (productivity of the product) for certain values of the factor  $x_2$  (staff capacity) and the fixed value of the factors  $x_1$  and  $x_3$  ( $x_1 = 7$ ,  $x_3 = 7$ ). That is, increased the productivity of product for different values of the staff capacity and fixed values of other factors leads to better the productivity of organizations.



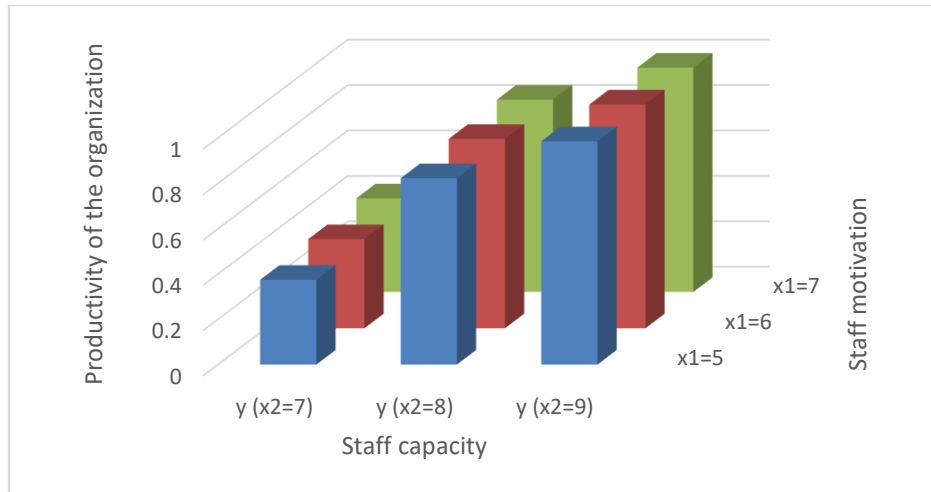
**Figure 2:** The influence of productivity of product on the organization's productivity for different values of staff capacity and a fixed value of other factors

Productivity of product is defined as the ability of an organization to receive any benefits from its business activities and rational use of resources. Productivity of product is the basis of all decisions of the organization in managing the activities and relationships with business partners. This indicator acquires the status of the main criterion used to assess the productivity of the organization. Productivity means a steady income from the sale of products, which must exceed the costs. As a result, profitability reflects the productivity of all economic activities of the organization.

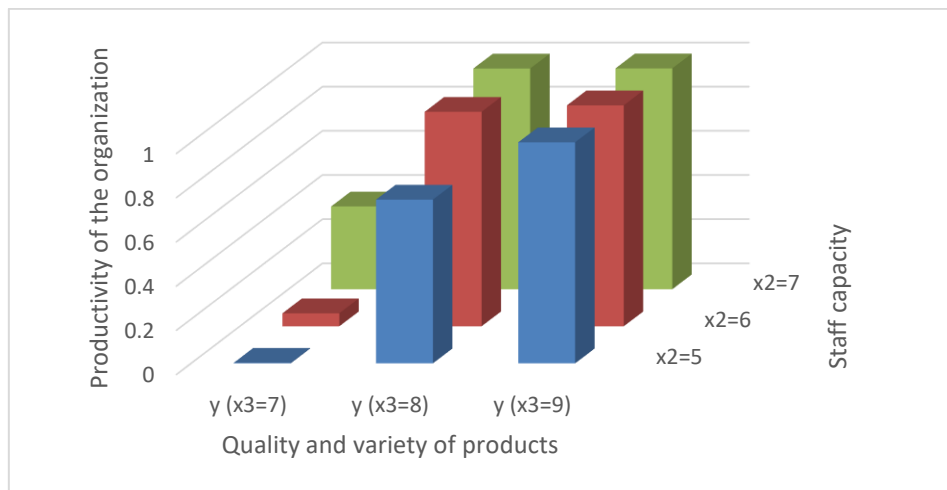
Figure 3 shows the dependence of the productivity of organizations when changing the factor  $x_2$  (staff capacity) for certain values of the factor  $x_1$  (staff motivation) and the fixed value of the factors  $x_3$  and  $x_4$  ( $x_3 = 7$ ,  $x_4 = 0$ ). That is, increased the staff capacity for different values of the staff motivation and fixed values of other factors leads to better the organization's productivity.

Improving staff capacity is one of the most difficult issues in personnel management. At the current stage of Ukraine's economy development, the problem of employee development, increasing the staff capacity has become important [19]. Those challenges confronting organization can be resolved only under conditions of appropriate motivational basis that is founded to motivate the staff of organizations to productive activities. It is a question of implementation of the forms and methods of personal development which would promote high productive work.

Figure 4 shows the dependence of the productivity of organizations when changing the factor  $x_3$  (quality and variety of products) for certain values of the factor  $x_2$  (staff capacity) and the fixed value of the factors  $x_1$  and  $x_4$  ( $x_1 = 5$ ,  $x_4 = 0$ ). That is, increased the quality and variety of products for different values of the staff capacity and fixed values of other factors leads to better the organization's productivity.



**Figure 3:** The influence of staff capacity on the organization's productivity for different values of staff motivation and a fixed value of other factors



**Figure 4:** The influence of quality and variety of products on the organization's productivity for different values of staff capacity and a fixed value of other factors

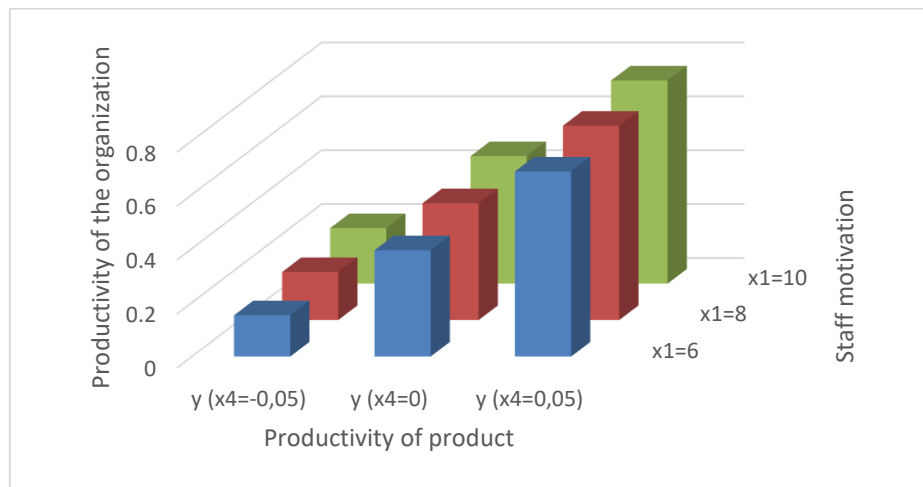
Assortment policy is one of the main objects of the organization's management system [20]. The quality and variety of products determine the feasibility of organizing development. Assortment policy is the basis of stability, productivity, individuality, competitiveness of the organization, if it is properly designed. So, in the end, the assortment policy determines the success of the organization in the market. In addition, the assortment policy is the most important of all the tools in which organizations expanding activity in the market.

Figure 5 shows the dependence of the productivity of organizations when changing the factor  $x_4$  (profitability of products) for certain values of the factor  $x_1$  (staff motivation) and the fixed value of the factor  $x_2$  and factor  $x_3$  ( $x_2 = 7$ ,  $x_3 = 7$ ). That is, increased the profitability of products for different values of the staff motivation and fixed values of other factors leads to better the organization's productivity.

Staff motivation is an important factor influencing business productivity. Staff motivation includes: motivation of work (encouraging staff to work effectively, receiving remuneration and meeting needs); motivation for learning and the acquisition of new knowledge and skills; motivation for stable and productive employment; motivation to develop the competitiveness of the employee; motivation to seek the capital goods; motivation to choose a new job, etc. Insufficient motivation in organizations has been often a limiting factor, does not allow organizations to realize their potential, reduces the labor activity

of the organization. The management system of the organization can function successfully with an effective system of incentives and motivation.

The probit regression model confirms that the staff motivation, staff capacity, quality and variety of products, productivity of product are essential indicators that reflects the organization's productivity.



**Fig. 5.** The influence of profitability of products on the organization's productivity for different values of staff motivation and a fixed value of other factors

Now, let's try to assess the productivity of a new startup projects the with a received probit regression model. Information on the performance of a new startup project is provided in the table 3.

**Table 3.**

Information for the probit model of a comprehensive analysis and assessments of the productivity of a new startup project

No	x <sub>1</sub>	x <sub>2</sub>	x <sub>3</sub>	x <sub>4</sub>
1	6	6	7	0,2
2	5	5	8	0,04
3	8	8	7	-0,1

The results of the settlement on the productivity of a new startup project are present below:

$$P(y_1 = 1) = \Phi(33,5 - 0,05 \cdot 6 - 1,25 \cdot 6 - 3,46 \cdot 7 - 15,08 \cdot 0,2) = 0,93$$

$$P(y_2 = 1) = \Phi(33,5 - 0,05 \cdot 5 - 1,25 \cdot 5 - 3,46 \cdot 8 - 15,08 \cdot 0,04) = 0,89$$

$$P(y_3 = 1) = \Phi(33,5 - 0,05 \cdot 8 - 1,25 \cdot 8 - 3,46 \cdot 7 - 15,08 \cdot (-0,1)) = 0,33$$

Assessment data demonstrate that the first and second startup project is the most productivity. Therefore, investors, managers, stakeholders and other financial entities or individuals who want to invest in the development of information technology need to look at the first and the second startup project.

## 5. Discussion

Staff motivation, staff capacity, quality and variety of products, and productivity of product affect productivity of the organization, which, in turn, affects successful development of organizations. The study highlighted that productivity of the organization is driven by variant factors of organization's activities. Important qualitative factors that determine the performance of the organization are staff motivation and staff capacity. Important quantitative factors that determine the performance of the organization are quality and variety of products, and productivity of product.

The current study's conclusion accords with considered research regarding productivity of the organization. Staff capacity are much likelier determines the main indicator we are researching (Crane, Gramlich, Luecking, Gold, Morris). Staff motivation are usually strongly affects the productivity of the organization (Heydari, Lai, Xiaohu).

The findings indicate that system of financial and strategic management can significantly affect performance of the organization and selection of startup projects. This study proved that the directions of the organization's activity can be translated into particular approaches to maintain of financial and strategic development of new startup projects. This research showed to be instrumental in demonstrating practices based on a probit regression model at the level of development of information technology organizations for financial and strategic management of startup projects.

## 6. Conclusions

Decreased productivity of the organization is a signal to implement measures for financial and strategic management of future development. Thus, productivity is an important tool for managing the financial and strategic development of organizations in the field of information technology. High productivity can be ensured by applying a clear method of modeling the future state of the organization and taking into account significant factors influencing productivity. It is also established that the assessment of the productivity of the organization allows identifying y productive and unproductive startup projects. This knowledge is essential for investors, stakeholders and other financial entities or individuals who want to invest in the development of information technology.

However, further research requires methods for assessing and interpreting the level of productivity, methods for predicting the level of productivity of the organization in the short term in the presence of factors of both positive and negative nature.

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