

**SYNERGETIC APPROACH AS A METHODOLOGICAL BASIS OF
RESEARCH ON THE ECONOMIC SUBSTANCE OF FIXED ASSETS
DEPRECIATION**

Sofia KAFKA, Assoc. Prof., PhD,

Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine

E-mail: Kafka@i.ua

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Abstract

In the article the different approaches to the economic essence of depreciation has been investigated, the background and benefits of using a synergistic approach as a methodological basis for its determination have been revealed. It has been established that the synergetic approach is a method of intercourse researches within the systematic approach in the basis of which is the principle of development. The main approaches of researchers and lawful regulatory requirements for determining of depreciation has been analyzed taking into consideration that its calculation is the most important aspect of the circulation of non-current assets. It is suggested to consider a depreciation as one that combines both the features of the expenditures that reduce retained earnings and the features of income items and does not affect the cash flow.

Keywords: *amortization, depreciation, fixed assets, method of accounting, synergetic approach, systemic approach.*

1. Introduction

In the current economic conditions a well-organized accounting is essential for entrepreneurs - a flexible set of economic actions that are constantly changing and improving. Today in Ukraine, one of the most complex and controversial accounting issues is accounting of depreciation withholdings of fixed assets.

The operations and accounting of depreciation charges in accordance with the laws and internal documents of the entity providing consistency and accuracy in completing primary documents, the calculation of depreciation of fixed assets, the control of operations, display operations in the accounts and reports can significantly improve the reliability of ongoing operations at the site and reduce the costs of accounting entity.

The presence of controversial issues and discussions on accounting amortization and depreciation of fixed assets, namely the issue of harmonization of tax claims and financial accounting of amortization and depreciation, the choice of the optimal useful life of fixed assets and establishing of the residual value, the proof of identity or difference between the concepts of “wear and tear” and “depreciation” and others indicate the relevance of the research topic.

Therefore, an objective need for a systematic study of the essence of depreciation regarding its legal definition and economic nature in the context of making a clear approach to its definition, due to the need to harmonize the financial accounting and tax legislation claims, the interests of the state, enterprises and society as a whole has arisen. The lack of scientifically based and

economically sound concept of depreciation can be explained by the ambiguity of many theoretical and methodological provisions of accounting science that in practice causes the ambiguity in choosing the optimal useful life of fixed assets and establishing of the residual value.

2. The degree of investigating the problem

The following scientists devoted their works to the issue of nature and accounting of amortization: N. Vygovska, S. Golov, L. Horodyanska, Z.- MV Zadorozhnyy, V. Orlova, S. Khoma etc., Russian: B. Averyanov, E. Bozhkova, E. Vinogradova, A. Goloshchapov, S. Grishina, T. Eremenko, K. Kostiukov, A. Kuznetsov, A. Lisenkov, A. Sokolovskiy and other scientists.

Today there is a quite significant number of publications concerning the nature of the depreciation from the legal and economic points of view, but there is no a single scientifically based approach to the interpretation of the concept “depreciation” that affects the choice of methods of its record display and, in turn, makes it difficult to take effective management decisions.

The purpose of writing the article is to study the conceptual approaches to determining the depreciation of fixed assets and justification of the use of a synergistic approach to the research problems of its definition that will take into account the multidimensional and complex nature of this category and agree on the conceptual apparatus.

3. Materials and methods

In the article a synergetic approach to the investigation is used, because it can provide the basis for the accuracy of extracting the objects of amortization and explore the relationship between them, taking into account the impact of the environment on the system of financial control.

The synergetic approach is a method of interdisciplinary research within the system approach. The system researches are a collection of scientific theories, concepts and methods in which the object of study or simulation is considered as a system. The system approach is a scientific basis for the rational investigation and efficient management of different systems, a set of methodological principles and provisions allowing to consider the system as a whole with the agreement of all its subsystems. The system principle or systemic approach to economic processes is the recognition of the fact that any organization is a system that consists of parts, each of which has its own purpose. Therefore, to achieve the common goals of the organization is possible only in case, when it is considered as a single system, trying to understand and appreciate the interaction of all its parts and combine them on the indispensable basis.

The system principle is put into the base of systematic analysis and the principle of development is in the basis of self-organization theory. The development can be represented as the implementation of new objectives, targeted changes; the process of adaptation to the environment; the contradictions in the system. The economic system operates on the one hand, according to the established laws of its development, rules and regulations, and, on the other hand, according to the taken management decisions. The system of financial control allows to detect the growing contradictions and provides the information to eliminate them. Consequently, there is an urgent need to study the economic and accounting depreciation essence as an integral system for taking management decisions.

4. Results and discussions

4.1. Determination of depreciation of fixed assets in the international and domestic accounting practice

The etymology of the term “amortization” and its historical development is going to be under consideration. The etymology of the term “depreciation” is a borrowing formed from Greek and Latin words. Despite this, in Russian this concept is borrowed not from Greek or Latin, but through German language: the word ‘depreciation’ is borrowed in the nineteenth century from German. The German word ‘amortisation’ in the meaning of “weakening, muffling” is a suffix derivation from ‘amortisieren’ which means “weaken, jamming”, that is reopening of French word ‘amortir’ - “weaken, soften, discharge, kill” [1, p. 169-170].

Today the problem of interpretation of the nature and content of disclosure of economic nature of fixed assets depreciation is quite relevant because still there is no a single approach to the definition of these concepts. The concept of depreciation is the most controversial and ambiguous in categorical apparatus, as the evidence is the lack of a unified approach to the interpretation of the concept.

The interpretations of the concept ‘amortization’, which are given in the economical literature, are considered in the table (Table 1).

Table 1: The definition of “depreciation” on the basis of the literature

№	Source	Definition
1	2	3
1.	Azriliyana A. [2, p.19]	Depreciation is 1) bringing forward the value of gradually worn fixed assets on the cost of manufactured products; 2) targeted accumulation of monetary financial assets and their subsequent application for compensation of worn-out fixed assets
2.	Baranov A. [3, p. 112]	Depreciation is the process of gradually transferring the cost of labour means as deteriorated on the manufactured product and the use of this value for further reproduction (replacement, refurbishment) of labour means
3.	Biluha M. [4, p. 82]	Depreciation is the process of gradual transferring of the value of fixed assets and intangible assets taking into account the costs of acquisition, production or improvements under the rules of depreciation established by legislative acts
4.	Borisov A. [5, p. 29]	Depreciation is a gradual wear of fixed assets and bringing forward their value on manufactured products
5.	Butinets F. [6, p. 103]	Depreciation is a calculated wear of fixed assets in monetary terms in the process of their implementation and production use
6.	Galchinsky A., -Yeshchenko P. [7, p. 45]	Depreciation is a cash replacement of worn means of production by gradual transferring of their cost per product produced
7.	Grabova N. [8, p. 23]	Depreciation is a form of fixed assets wear and tear. Two forms of physical and moral deterioration are distinguished. The first form of physical deterioration occurs in the process of the appliances use when their working units lose their qualities because of attrition. The second form is associated with the underuse of labour appliances when under the influence of natural and time factors the metal joints and machine mechanisms and tools are getting rusted and the plastic parts and rubber are getting “aged”.

1	2	3
8.	Zagorodny A. [9, p. 69]	Depreciation is a wear and tear of capital assets the calculating basis of which is the original value of fixed assets and their replacement value at the time of wear, i.e. the cost of reproduction at the moment
9.	Zadorozhnii Z.-M. [10, p. 169]	Depreciation occurs as monthly compensation for shock absorption of fixed assets
10.	Kovalev V. [11, p. 154]	Depreciation is wear, the basis for the establishment of standards of which is the replacement value of capital assets, which represents the cost of their reproduction in modern prices
11.	Len' V. [12, p. 112]	Depreciation is the deductions, the calculation of which should be based on the real value of capital assets, i.e. renewable value and in determining depreciation rates it should be taken into account only the costs of simple reproduction
12.	Mocherny S. [13, p.87]	Depreciation is the process of bringing forward the fixed assets value on the finished product in the course of the physical and moral wear
13.	Orlova V. Khoma S. [14, p. 217]	Depreciation is a gradual decline in the value of fixed assets as a result of wear and gradual transferring of their value to the manufactured products with the purpose of accumulating funds for their reproduction. Depreciation withholdings, being brought forward on the finished product, is the part of compensation previously advanced for the purchase of fixed assets capital, which has moved from the category of non-current assets in the category to the current assets of the company.
14.	Panchyshyn S. [15, p. 539]	Depreciation is the compensation in cash value of capital goods which correspond to their wear and tear (physical - from the use in production - and moral - because of undercharging of existing machines and mechanisms or appearance of their productive analogues)
15.	Pokropivny S. [16, p. 35]	Depreciation is the process of transferring the previously advanced cost of labour means to the cost of manufactured products with the purpose of their full recovery
16.	Rudenko A. [17, p. 216]	Depreciation is a way to accumulate funds for reproduction of fixed assets
17.	Tarasiuk G., Schwab L. [18, p. 220]	Depreciation is a systematic allocation of the asset cost, which is amortized over the period of useful operation of the assets
18.	Chebanova N., Vasilenko Yu. [19, p. 307]	Depreciation is a systematic allocation of amortized amount of assets over the term of their useful operation
19.	Shegda A., Litvinenko T. [20, p. 135]	Depreciation is the process of gradual reduction of fixed assets cost to the value of the newly created products with the purpose of their full recovery

Source: own development

Based on the data presented in the table it may be noted that most scientists believe that depreciation is the calculating in monetary terms of wear and tear of fixed assets in the process of their implementation and production use.

The summary data show that:

- ✓ one group of scientists believe that depreciation is simply a monetary expression of wear and tear of fixed assets 16,6 % (Boichyk I., Hanin B.);
- ✓ –the supporters of the other position consider amortization to be nothing but a process of transferring the depreciation cost of fixed assets to the production cost 50 % (Babich V., Bandurka V., Butynets' F., Boliukh M., Popovych P., Poddierogin A.);
- ✓ –the third group of scientists state that depreciation is a way and method of accounting 33,4 % (Koblianska O., Korobov M., Moshensky S., Sopko V.).

After analysing the concept of “depreciation”, we can conclude that four basic positions on this definition are pointed out in the textbooks (Figure 1).

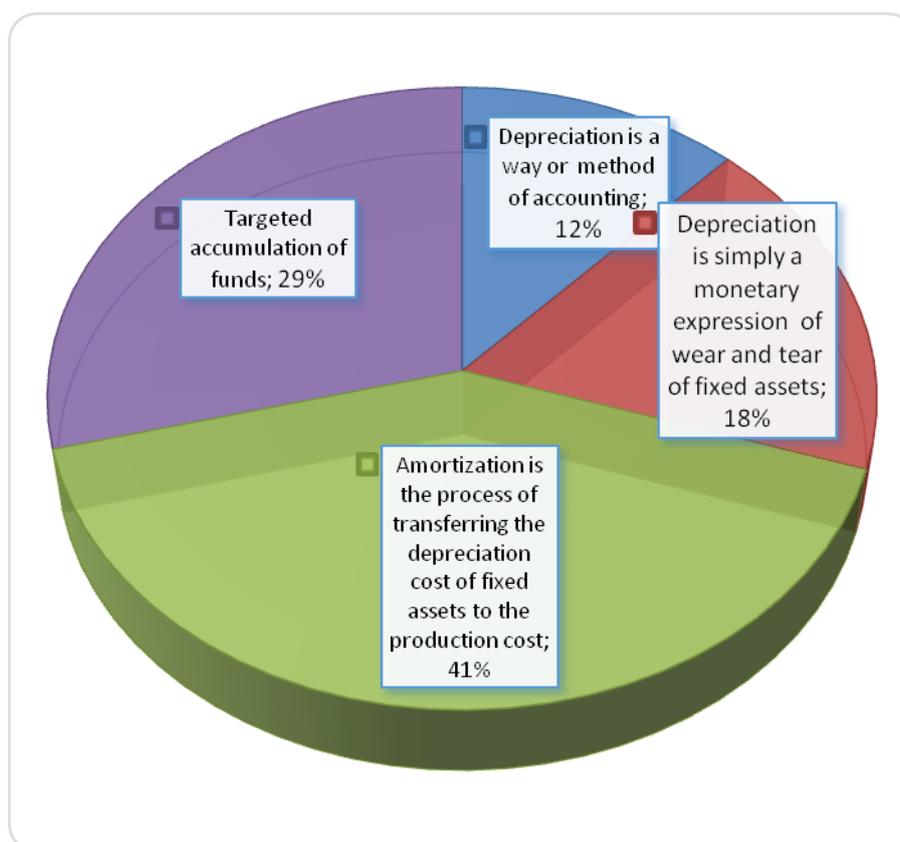


Figure1: Approaches to the interpretation of the essence of the concept of “depreciation”

Source: own development

Thus, scholars and practitioners’ opinions are divided. One group believe that depreciation is a monetary expression of wear, the second - the process of transferring the wear and tear cost to the production cost, the third - argue that depreciation is a way or method of accounting, and the fourth - it is a targeted accumulation of assets (Figure 1) .

Scientist M. Chumachenko [21] remarks that in the current regulations on accounting, particularly in paragraph 4 NAS 7 “Non-current Assets” [22] a simplified interpretation of the concept of fixed assets depreciation for the term of their useful operation is presented, namely “the systematic allocation of the cost that is depreciated”. He proves that this concept is much broader and it should be understood together with a profit as the source of a simple reproduction of fixed assets, and, accordingly, as an important factor in the implementation of innovative processes in the

economy of Ukraine. Such approach to the concept of depreciation will affect the construction of the entire state economic policy.

However, S. Golov [23] argues that the definition of amortization, shown in the NAS 7 “Non-current Assets” [22], is used in most foreign sources and supplemented as follows: “Depreciation for the accounting period is calculated directly or indirectly from the net profit or loss for a certain period”.

These authors confirm the validity requirements of monitoring the implementation of investment activity and use for these purposes depreciation withholdings. Also, S. Golov, agreeing in general to M. Chumachenko’s idea on definition of depreciation, remarks that the reason for this phenomenon is not the inertia or lack of knowledge about the requirements of market economy in the domestic managers’ thinking, but non-flexible state fiscal policy which discourages the investment activity of enterprises [23, 21].

Moreover, such diversity of views is characteristic not only for the initial period of the development of depreciation theory, but also for the modern period. However, despite the controversial interpretations of the concept of depreciation, there is not still a single point of view, though the fundamental solution to this issue is very important. It is considered to be quite obscure that most experts define the depreciation of fixed assets as a reimbursement of wear and tear of non-current asserts, confusing these concepts to great extent. But this is not the point because these two concepts differ from each other in the content and characteristics. Taking into account these data we can conclude that the term “depreciation” used in accounting, is not as physical deterioration or decrease in the market value of the object within the given time, but as a debiting of the production assets cost during the period of their useful operation. The term is used to reflect the gradual debiting of the fixed assets cost on expenditures.

4.2. Systematization of approaches to determining depreciation

Thus, there is no precision in the views of scientists to determine the economic essence of depreciation. It is connected with the fact that the economic mechanism for identifying and accruing of depreciation is being investigated within many sciences, particularly in economics, accounting, analysis, planning, and law. The author’s approach to the definition of the studied term allows us to focus on interdisciplinary nature of determining depreciation. It is fair to notice that until recently the problem of determining depreciation was the subject matter of study for various specialists. The identification and interpretation of economic essence of amortization was the traditional object of study for experts in the field of accounting. The interest to the investigation of the problems in defining and accounting display of the fixed assets depreciation has increased as a result of the transition to the international standards in recent years. In this regard some preconditions have occurred for implementation of the comprehensive study of issues on the economic essence of depreciation taking into account the scientific achievements of different expert groups.

Taking into account the diversity and complexity of issues on fixed assets depreciation, the ambiguity of approaches to their determination, we consider that it is reasonable to use a synergistic approach as an interdisciplinary research method for specifying this category and harmonizing the conceptual apparatus.

In the course of analysis of the definitions of “depreciation” we can summarize the main approaches to the interpretation of this definition: accounting, economic, financial taking into account the preconditions and benefits of using a synergistic approach as a methodological basis of the study and present them in Figure 2.

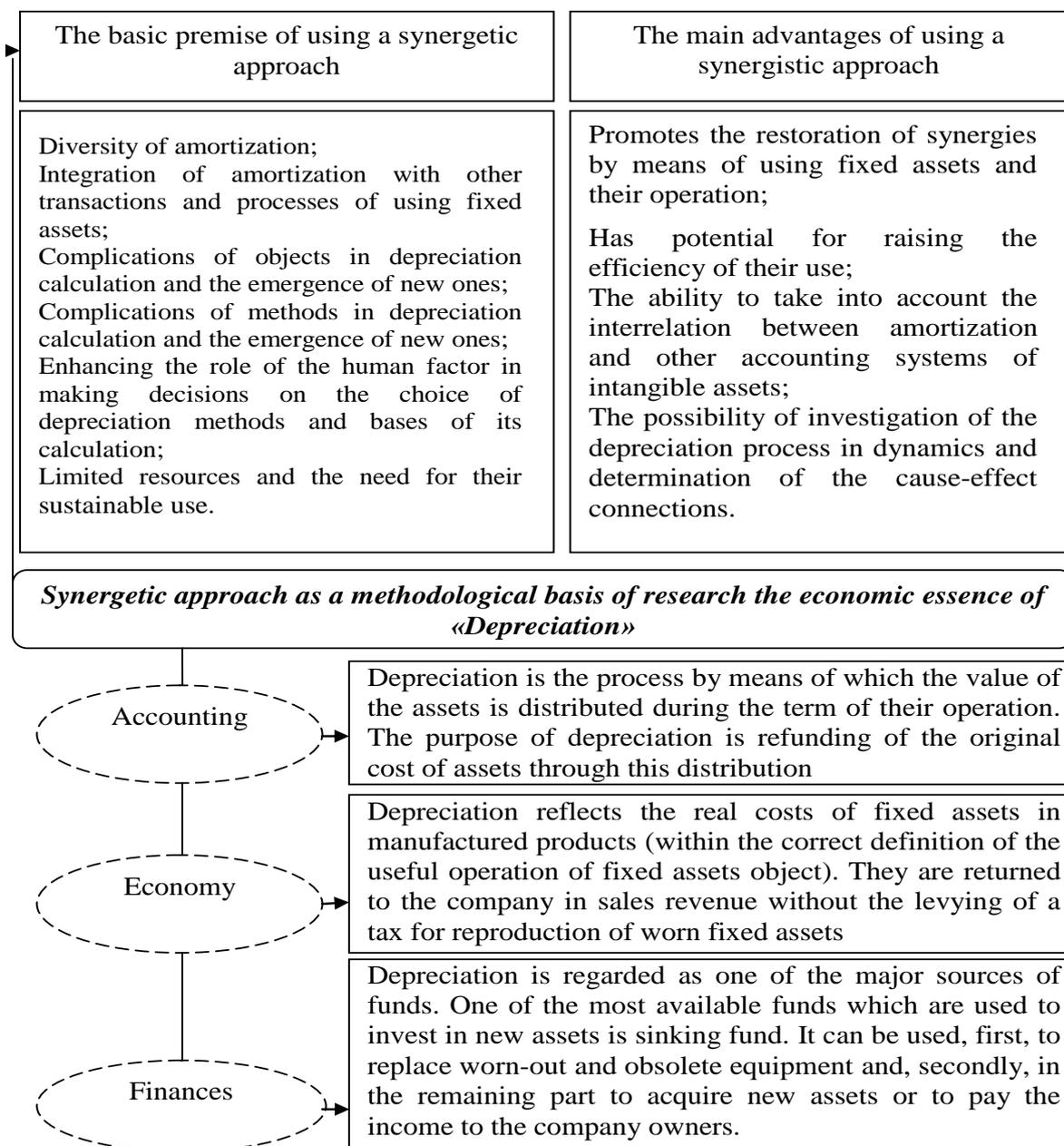


Figure 2: Synergetic approach as a methodological basis of the study of depreciation as an economic category

Source: own development

It has been found out through researches that the author considers depreciation from three main points of view that is codified in Figure 2. These approaches to the interpretation of the essence of the concept of “depreciation” give us a full and clear understanding of this phenomenon in the company that makes management decisions effective.

5. Conclusions

Examining definitions and approaches that have been proposed by various scientists, academics and economic trends across time being, we have found that virtually none of the authors do not provide a complete, more advanced and comprehensive definition of the term “depreciation”.

As a result of writing the article the following conclusions, that take into account the existence of different points of view disclosed in the economic literature and summarize a large number of views on certain aspects of depreciation, have been made:

1. Depreciation is the most important aspect of the circulation of non-current assets.
2. Discussion on determining of depreciation is related to its interdisciplinary integration with other sciences. The study of the evolution of the formation of the term “depreciation” allowed us to point out three main conceptual approaches: economic, financial, accounting.
3. Taking into account the multidimensional and complex control, the ambiguity of approaches to its definition, for specifying this category and harmonizing the conceptual apparatus, it is proposed to use a synergistic approach as interdisciplinary research method that will ensure the accuracy of distinguishing the objects of depreciation accrual and explore the interconnection between them, taking into account the environmental impact, identify synergistic effect of depreciation and amortization accrual and efficient use of fixed assets and suggest the ways to strengthen it.
4. Some authors equate the concept of “depreciation” with the concept of “depreciation withholdings”. But depreciation is a process of transferring the cost of labour means to the re-established product, and depreciation withholdings are financial value of the lost value of fixed assets in the process of production and as a result of their obsolescence.
5. Depreciation combines in the same time both the features of expenditures that reduce retained earnings and features of income items and does not affect the cash flow. In the first case the depreciation stands as an element of production costs not associated with the funds outflow in the form of depreciation withholdings, which are included in the cost of production. In the second case, depreciation is a part of the proceeds from the sale of products which does not bring additional cash inflow.
6. Due to depreciation as an economic process the lost value of fixed assets in the process of production is not being lost but is being stored, accumulating in the sinking fund.

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Rezumat

În articol sunt cercetate diverse abordări aferente conținutului economic al amortizării, sunt dezvoltate fundamentele și prioritățile aplicării abordării sinergice ca bază metodologică pentru conturarea acesteia. Ca rezultat s-a stabilit că, abordarea sinergică este o metodă sau principiu metodic de cercetare interdisciplinară, ca parte integrantă a unei abordări complexe, bazată pe principiul evolutiv de dezvoltare. Sunt studiate principalele tratamente ale cercetătorilor și prevederile reglementării normativ-legislative referitoare la depreciere-amortizare, considerând că calculul acesteia este cel mai important moment al rotației activelor imobilizate. Se propune examinarea amortizării ca fenomen care combină caracteristici aferente cheltuielilor, ce reduc profitul din bilanț, precum și ca elemente de venituri, și care în acest context nu afectează numerarul.

Cuvinte-cheie: amortizare, uzură (depreciere), active imobilizate, metoda de evidență, abordare sinergică, abordare sistemică.

Аннотация

В статье исследованы различные подходы к определению экономической сущности амортизации, раскрыты предпосылки и преимущества использования синергетического подхода как методологической основы для ее определения. Установлено, что синергетический подход это метод междисциплинарных исследований в рамках системного подхода, в основе которого - принцип развития. Проанализированы основные подходы ученых и нормативно-правовые требования по определению амортизации, учитывая, что ее начисление является наиболее важным моментом кругооборота основных средств. Предложено рассматривать амортизацию, как такую, что одновременно сочетает черты статей расходов, которые уменьшают балансовую прибыль и черты статей дохода и при этом не влияет на движение денежных средств.

Ключевые слова: амортизация, износ, необоротные активы, метод учета, синергетичный подход, системный подход.

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