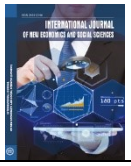

UNDISCLOSED (INVISIBLE) ASSETS, INTELLECTUAL (HUMAN) CAPITAL.THE ESSENCE, AND THE NEED AND METHODS OF ANALYSES

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Abstract

Even though there are many existing definitions of intellectual capital, there is still much scope for individual interpretations of that which is intellectual capital and that which it consists of. The aim of the article is not to propose a novel, further definition, but to assess the problem from the aspect of an analyst (specifically, external) who conducts financial analyses of businesses. It is important that the person knows different opinions on the issue that result from different definitions, and above all that the person knows what determines that in an analysed business there are components of undisclosed (invisible) assets. There is a brief discussion of the four most popular methods of valuing intellectual capital that can be used by an external analyst and an indication of the disadvantages of them. There is also an indication of the effect and importance that an analysis of intellectual capital has on the final result of a financial analysis of a business.

Keywords: *Intellectual capital, human capital, structural capital, undisclosed assets, invisible assets, methods of analyses, customary financial analysis of a business and intellectual capital*

Statement of the problem in general outlook and its connection with important scientific and practical tasks

Analytical need

One of the basic questions that arises at the beginning of a financial analysis of a business is whether presented accounting records describe the financial situation of the business properly and in accordance with the facts? It is obvious that only can true records be the basis for a reliable analysis. Apart from a situation in which we encounter incorrect entries (unintentional or worse, intentional) or "creative" application of existing regulations (i.e. "creative accounting"; a topic which in itself is extensive and merits separate study), it

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happens that an analysis of correct accounting entries is insufficient to present a full image of the financial situation of a company.

To note is that an analysis of a business is made for various purposes which include providing finance or a valuation to purchase a business and, therefore, the adequacy of it is extremely important for drawing appropriate conclusions. Errors can be very costly. The following question therefore arises: Do the current accounting standards fully depict the financial situation of a business?

Unfortunately, the answer is negative. Invisible assets (undisclosed assets) that are a significant part of the assets of a business are not recorded in current accounting systems. Pursuant to art. 3 (1) (12) of the Accounting Act, assets (balance sheet) are understood to mean the assets that an entity controls that have a reliably determined value, resulting from past events, which will result in the future in an inflow of commercial benefit to the entity. Assets must, therefore, meet three basic criteria: a business has full control over them, the value of them can be reliably determined, and the purpose of owning them is to achieve in the future commercial benefit for the business.

Unfortunately, invisible (undisclosed) assets do not meet those conditions. That is confirmed, among others, by the words of Allan Greenspan, former chairman of the Federal Reserve Commission: "Accounting does not take into account investment in knowledge, e.g., the value of research and development, most software, or brands" or Arthur Levitt, president of the US Securities and Exchange Commission - SEC): "As intangible assets grow in size and scope, more and more persons are questioning whether publicly available data reflects a true value and the factors behind it."[1]. However, lack of information is not the result of any error. Therefore, RS Sriram argued that because "intangible assets do not meet the criteria of an accounting definition of assets, reporting the value of them is even providing unreliable information to investors"[2].

The importance of invisible assets was noticed in the second half of the 20th century, and it grew in the first decades of the 21st century [3]. According to many analysts, it is invisible assets that have a fundamental effect on the financial size and market position of a business [4]. And so the analysis of those components becomes more and more important. This analysis encountered many difficulties.

Accounting problems related to invisible assets are related to the concept, categorization, valuation, and presentation of them. Moreover, invisible assets are influenced by human behaviour the features of which are limited rationality in making decisions. The difficulty of the analysis is evidenced by the fact that, according to some analysts, many components of invisible assets cannot be valued in monetary terms.

This text presents the authors' considerations on the importance of invisible assets for a financial analysis of a business. The authors presented in the text the main concepts and definitions of undisclosed assets and intellectual capital, made a typology of them, and presented observations related to the valuation of them.

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Analysis of latest research where the solution of the problem was initiated
Undisclosed assets and intellectual capital

In moving on to a detailed discussion of the issue it is worth organizing the basic concepts. Unfortunately, in many publications the concepts of invisible assets and intellectual capital are used interchangeably. This is not the correct solution and confuses consideration. The best solution is to use the balance sheet approach whereby we classically acknowledge as being undisclosed (invisible) assets which a business has, and we acknowledge as being intellectual capital the sources of obtaining (financing) those components. Therefore:

Assets	Liabilities
Invisible property (assets)	Intellectual capital

When trying to present a list of invisible assets it is worth starting by presenting the common features of them.

First, they are under the control of a business. It is necessary to include them in the assets of a business. But many questions arise; for example, how are we to consider human resources? Are they under the control of a business or does the business "have" employees? Does a business have full control over the image of a business|? Therefore, the level of that control in some instances remains debatable.

Second, they lack physical form. It is impossible to indicate or show them. The existence of them is the result of knowledge and belief (although they are actual, e.g., experience).

Third, they are not fully identifiable; they are usually defined descriptively and often broadly. The lack of clear boundaries of the concepts increases the difficulty of measuring those quantities.

Fourth, they are unique to each business. Each business has a unique set of them; there is no other (e.g., experience, customer relations).

Fifth, they are difficult to gather. The process of obtaining them is complicated, requires knowledge; e.g., building an image, brand.

Sixth, they have the ability to be used in many ways at the same time. For example, organizational culture affects not only the effectiveness of an organization, but is also an additional incentive for prospective employees. A business has a wider choice of them and, therefore, better human resources,

Seventh, they cannot be obtained by money alone. For many invisible assets, there are no offers of sale; i.e., there is no "market" for that asset. A business has to develop or acquire them on its own (e.g., by employing employees having appropriate knowledge and experience).

Eighth, it is time-consuming to develop and acquire them. A long time passes from the concept of a management decision to acquire an asset (e.g., developing an image) to actually acquiring it. Often they are also collected continuously; continually, during the "life" of a business; e.g., experience, databases.

An analysis of the content of many existing definitions gives the following bases to distinguish the following components of invisible business assets: a strategy and implemen-

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tation of it (e.g., accuracy, attainability); identity (strategic goal); management and organizational culture of a business; quality and skills of managers; brand, reputation, and image; experience, technologies and processes, and know-how; employees; innovation, flexibility (so-termed "openness to changes"); a possessed customer portfolio, customer relations; databases; intellectual property (not disclosed in intangible assets). The above components are defined descriptively and the boundaries of concepts (for at least some of them) remain fluid, as has already been mentioned in an analysis of common features. The components are not of equal important to every business, although the goal of a business should be to maximize each position. There are also, of course, no thresholds; the level of a component at which a business can stop collecting, building, and sourcing it. At present, there are no universally accepted definitions of intellectual capital (in publications on commerce there are various names for the concept; e.g., knowledge, knowledge capital, knowledge resources). Below, the authors present definitions that have been selected from among many.

According to L. Edvinsson, MS Malone, intellectual capital is knowledge that can be transformed into value [5], *Roos, Pike and Fernstrom* state that intellectual capital can be defined as being all non-capital and non-physical resources that are fully or partially controlled by a business and affect the value of it [6], *TA Stewart* describes intellectual capital as being intellectual matter: knowledge, information, intellectual property and experience that can be used to create wealth (knowledge that does not lead to this goal is not intellectual capital under that definition!)[7]. *M. Bratnicki* defined intellectual capital as being the sum of knowledge possessed by persons who make up a business community and the practical transformation of the knowledge into component parts of the value of a firm [8]. *D. Dobija* recognizes intellectual capital as being a source of financing a firm's intangible resources contributing to the generation of future benefits, and, therefore, significantly influencing the process of creating the value of a firm [9].

According to *G. Urbanek*, intellectual capital is an invisible resource of a business that creates visible effects. Intellectual capital is both knowledge itself and the result of transforming it into intangible assets [10]. *G. Roos, J. Roos.* defined intellectual capital as being the sum of hidden assets not included in financial statements, which includes both that which is left in the minds of employees and that which is left when employees go home [11]. For different definitions see the Organization for Economic Cooperation and Development ("OECD") and the International Association of Accountants. According to the OECD definition from 2000, intellectual capital is expenditure on all novel, purposeful activities or tools used in a business that have the aim of changing or extending existing knowledge, or acquiring or improving existing goods, or aimed at acquiring more knowledge [12]. International Accounting Associations (AIA, Association of International Accountants) consider intellectual capital to be the total capital of a business related to the knowledge it contains (knowledge-based equity)[13].

It is worth asking the question what actually is included in intellectual capital? The table 2 below shows the components of intellectual capital under different concepts :

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Table 2. The components of intellectual capital under different concepts

L. Edvinsson	- Human capital, - Structural capital,
H. Saint-Onge's value platform model	- Human capital, - Customer capital, - Organizational capital,
K.E. Sveiby	- Employee competences, - internal structure, - external structure,
A. Brooking	- Assets relating to persons, - Marketable assets, - Intellectual property assets, - Infrastructure assets,
Conception of M. Bratnicki and J. Stru'yna	- Human capital, - Social capital, - Organizational capital (internal structure, external structure, development capital),
A. Pietruszka-Ortyl	- Social capital, - Organizational capital (relational capital, innovative capital, organizational culture, infrastructure),

Source: own study

Table 2. Returning to a balance sheet presentation of the issue, we can expand it into the following form.

Assets	Liabilities
Intangible assets (which inlcude): - brand, - reputation, - knowledge, experience, data	Intellectual capital: - human capital, - structural capital, - relational capital (customers, market)

Source: own study

Aims of paper. **Methods**

Issues to do with the valuation of intellectual capital and invisible assets.

Currently, the most common measure of assessing the value of invisible property (intellectual capital) is the difference between the market value and the accounting value in a business (many publications expressly state that this difference is equal to intellectual capital)[14]). However, that approach omits several important factors. First, it is worth paying attention to "hidden assets". Assets, such as shares, bonds, real estate, that are not properly disclosed in normal accounting situations, or the disclosure of which, albeit lawful, does not represent the true value of them. Those assets are not of an intellectual nature, but are shown in accounts not at market value, and affect a stock market valuation. Second, it is important to remember about including in the essence of a market valuation in a specific industry the prospects of and forecasts for the national economy. Third, of

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importance is that a market value (e.g., stock market value) also depends on the behaviour of investors which is not always rational (periods of widespread pessimism or optimism). Finally, not all components of intellectual property are not disclosed in customary accounting. This applies, among others, to patents, licenses, purchased databases, expenditure on training, and expenditure on research and development. The consequence of not including those amounts in customary accounting is the fact that the amounts allocated to that type of investment (e.g., training, financing of employee studies, and also participation in conferences, purchases of specialist publications) are not reflected in the size of assets in financial statements. If expenditure on undisclosed assets were to be analysed in accordance with a customary accounting model, an assessment would be unequivocally negative. Any investment that does not increase the value of assets means ineffective management of the resources of a business, and managers are often are held to account on the basis of basic indicators of customary accounting. As a result, when a budget is planned, those expenses are often the first ones that are reduced in relation to the needs that are reported by organizational units. Only does the application of additional tools for assessing and valuing intellectual capital (invisible property) permit changes in interpreting the performance of a business. Thanks to that, we get the opportunity to use the results to effectively allocate resources in conditions in which there are commercial limitations (e.g., is it better to spend more on participation in conferences or on postgraduate studies by employees?).

Exposition of main material of research with complete substantiation of obtained scientific results. **Discussion**

Methods of valuation of invisible assets and intellectual capital

If the problem is current accounting standards, perhaps the solution is to change them? Removing current imperfections underlies the notion of the dimension of triple-entry book accounting. The author of that is Yuji Ijiri [15] and, at present, the method is still being discussed and developed [16]. Triple-entry accounting is an extension of the dimension of double-entry accounting by adding the possibility of a third entry, and the main goal is to create novel possibilities for measuring the performance of a business (which includes that in the future).

- I dimension - accounting that records the value of assets (that which a business has and the sources of financing),
- II dimension - accounting that records the streams of revenue and costs that indicate the reasons for changes in the value of assets,
- III dimension - accounting that records the functioning commercial forces in conjunction with the previous two, explaining the reasons for changes in the value of streams of income and costs.

From the aspect of an analysis of intellectual capital, it is precisely the introduction of the third dimension of accounting, explaining the causes of changes in streams of revenue based on the forces affecting a business, that is a step in measuring the value that is sought of undisclosed assets. However, there a few practical applications of the method.

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A method of valuing intellectual capital should enable: monitoring effectiveness (control of activities), valuation of the organization for the needs of the market (mergers, acquisitions), providing information for shareholders (assessing and creating an image), providing information to prospective investors (decisions), and showing hidden values(learning).

Uniform standards for the valuation of intellectual capital have not yet been developed, and many methods exist. The well-known management theorist Karl-Erik Sveiby proposed dividing the methods of valuing intellectual capital into four groups [17] (he divided the several dozen methods known to him !!):

- market capitalization methods,
- scorecard methods
- methods of direct valuation of intellectual capital,
- methods based on return-on-assets.

The variety of methods and the number of them are unequivocal proof, apart from the possibility of a different approach, of the complexity of the issue, and primarily that the methods used so far are inefficient and that a search for better ones is still ongoing. The choice of a final method also depends, among others, on access to underlying information (data) (analyses within a business, analyses of external analysts); on the budget of a process (research costs, but also the time of obtaining information), and the purpose of an analysis (capital investment, acquisition, merger, provision of financing, an assessment of the effectiveness of activities).

Below is a description of the four most popular methods and an assessment of the reliability of them.

1. Tobin's q indicator

A commonly used and simple indicator for assessing the intellectual capital of a business is the Tobin q indicator that was popularized by James Tobin, a Nobel laureate in 1981. It belongs to the group of methods that is based on market capitalization. It should be noted, however, that the primary purpose of the indicator is to identify businesses the shares of which were overvalued or undervalued. In the general formula, it is calculated as the ratio of the market value of a business to the replacement value of tangible assets. The level of this indicator reflects the value of investment in technology and

$$\text{Q Tobin} = \frac{\text{market value of a business}}{\text{the replacement value of its assets (disclosed)}}$$

In a perfect market situation, the ratio should oscillate at around 1.0; if for one business it is higher, nothing prevents others from copying the business model which will reduce profit and, as a result, a valuation. However, a business is not only a collection of disclosed assets, but also a collection of invisible assets.A value greater than one indicates the presence of invisible intellectual capital in a business. The value of that capital is directly proportional to the level of the ratio; a high one is indicative of knowledge-based firms.

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The disadvantage of the method is the reliance on a stock market value, which is influenced by various factors (partly subjective) and is sometimes subject to huge, rapid changes. Another problem is determining the replacement value of assets, especially, in recent decades, which has the feature of an increase in the share of intangible assets in the total assets of businesses (e.g., what is the replacement value of specialist software purchased 3 years ago?). A popular simplification in the form of adopting the book value of assets of a business leads us to the popular stock exchange ratio of P / BV.

2. CIV (Calculated Intangible Value) method - the method of calculating intangibles (or intangible assets)

It belongs to the methods based on a return on assets. It was developed in the 1930s in the USA for tax purposes. The introduction of prohibition meant breweries and distilleries used it to calculate the value of intangible (undisclosed) assets lost as a result of decisions of the state. The method still has application in US legislation. Ultimately, T. Stewart in 1997 adjusted it to be capable of valuing the entire intellectual capital of a firm [18]. CIV is based on historical data both from the financial statements of a company being assessed for 3-5 years, and external information on the average historical return on assets of the analysed industry and company; ROA in the same period of time. Additionally, the tax rate and the weighted average cost of capital of a firm or sector should be determined on the basis of the purpose of a valuation. The phases are as follows:

a) Calculation of the average profit before tax for the last 3-5 years,
b) Calculation of the average value of tangible assets over the last 3-5 years,
c) Calculation of the company ROA (by dividing the value from point 1 by the value from point 2),
d) Calculation / determination of the average ROA for the sector in the last 3-5 years,
e) Calculation of excess profit (above sector average); subtracting from average pre-tax profits (phase 1) the product of the average ROA for the sector (phase 4) and the average value of the balance sheet ("tangible") assets of a business,
f) Calculation of the so-termed "Intellectual bonus". Deduction from the surplus from point 5 the product of this surplus and the average tax rate in 3-5 years, which means how much net profit a firm achieves because of intangible assets,
g) Estimate the present value of the bonus by dividing the intellectual bonus by the appropriate discount rate (e.g., WACC). The calculated amount is the value of the assets not included in a balance sheet

A weak or declining value of CIV could indicate that a firm is too focused on building tangible values (real estate, tangible assets) and is paying too little attention to R&D or building a brand. A rising CIV could indicate that a business is creating the ability to generate future cash flows before the market is able to recognize that. An additional advantage of the CIV method is the relationship between the CIV and Tobin's q index, indicated after years of research, in a situation of a low reading of it, the CIV informs whether we are dealing with a business that is expiring, or one that has hidden intangible assets not yet reflected in a share price. An additional advantage is the simplicity and uncomplicated level of calculation.

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However, the methodological assumptions of the indicator pose a problem [19]. Is the intellectual capital of a firm only present when the ROA value of a business is higher than that of the sector? Does it only decide the level of profitability (and the importance of capital resources, modern machinery)?

3. Value Added Intellectual Coefficient (VAIC).

It was compiled by the Croatian A. Pulic [20] and is one of the methods based on a return on assets. This method permits estimating the value of intellectual capital for also businesses that are not listed on a stock exchange. It enables the analysis of the process of creating value through intellectual capital. The phases of calculation are as follows:

a) Calculating value added (VA - value added) as the difference between revenue and operating costs, except for the expense of employee (e.g., wages and social security),
b) Calculating the efficiency of using equity capital (VACA - *value-added capital* assets *coefficient*) - as the quotient of the value added and the value of the equity of a business (CE - capital employed) understood as Assets-Liabilities,

$$VACA = VA / CE$$

c) Calculating the effectiveness of the use of human capital (VAHU- value-added human capital coefficient) as the quotient of value added and human capital (HC-human capital), with the value of human capital being determined as total expenditure per employees,

$$VAHU = VA / HC$$

d) Calculating the efficiency of using structural capital (STVA) as the quotient of the value of structural capital and value added, where the value of structural capital is the difference between value added and human capital (the more value added of human capital, the less structural capital),

$$STVA = SC / VA$$

where: $SC = VA-HC$

e) Calculation of the VAIC coefficient as a sum of the efficiency ratios of equity, human capital, and structural capital.

$$VAIC = VACA + VAHU + STVA$$

Normally, the value of that indicator is between 1 and 3 [21]. The methodological assumption of the coefficient is a simple relationship between the effectiveness of a business and the amount of its intellectual capital. However, in actual conditions, a business could have a high level of intellectual capital, but use it inappropriately (e.g., the question is whether we lack knowledge or whether we are just unable to use it?). It may be that the level of necessary investment in intellectual capital is lower than would appear from this analysis.\

4. Income from knowledge (intellectual) capital KCE (Knowledge Capital Earnings)

It was compiled by Baruch Lev [22] and is usually referred to as a development of the CIV method, however, in the instance of KCE, the missing component of CIV was added, namely, the use of not only historical but also forecast data for the calculation.

Commercial result = α x tangible assets + β x financial assets + δ x invisible assets.

The weights α, β, δ were estimated on the basis of data from several industries at the level

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of 7%, 4.5%, and 10.5%, respectively. The research conducted by B. Lev also concerned which of the three components: cash flow, customarily understood profit, or profit on knowledge capital, is most correlated with ROE. He found that the correlation was only 0.11 for cash flow, 0.29 for accounting profit, and as much as 0.53 for knowledge capital gain (invisible assets). By that, among others, he justified the adoption of the mentioned weights; rates of return on various types of assets. The phases are as follows:

a) Estimating so-termed normalized profits by averaging to eliminate short-term profit fluctuations, one-off events, based on data for the last three years (historical data) and for three future years (forecast data),
b) Determining the average value of a firm's tangible and financial assets in an audited period and multiplying them by the adopted rates of return (weights) for specific type of assets,
c) Subtracting the calculated profit from non-intangible (undisclosed) assets from the normalized profit determined in the first phase; the obtained result is the profit on KCE knowledge capital,
d) Dividing the KCE by the rate of return on capital of knowledge to obtain the value of the total invisible assets at the use of a business.

$$\text{invisible assets} = \frac{\text{commercial results} - \alpha \text{ x tangible assets} - \beta \text{ x afinancial assets}}{\delta}$$

The estimation of the rates of return on various types of assets can be freely changed, e.g., in the event of a change in market realities. This method also makes it possible to calculate, for example, the intellectual profit margin (KCE / Sales) and the degree of basing a firm's operations on knowledge (KCE / Book value).

The advantage of the KCE method is that it directly shows the amount of undisclosed assets. The disadvantage is the subjectivism in determining the rates of return at a certain level, and the artificial and authoritarian division of the profit generated by three types of assets. After all, the essence of intellectual capital is combining various types of assets to generate a greater balance sheet surplus. Therefore, changes in the items "financial assets" or "tangible assets", or both, can change the item "commercial result" so that after calculating this method, we obtain another amount of invisible assets despite the fact that there is no actual change. Another issue is the inclusion of forecast profit in the next 3 years in the calculations. It is subject to uncertainty resulting from the fact that reality may not apply to the assumptions that have been made (e.g., unforeseen changes in a competitive situation because of new entries onto a market).

Results

Intellectual capital and "ordinary financial analyses".

As previously mentioned at the beginning, the significance of an analysis of intellectual capital in a financial analysis of a business is growing, and the omission of this area of analysis should be clearly interpreted as being a mistake. However, even conducting it, because of complexity, labour-intensiveness, access to information, and primarily prob-

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lems with definitions and measurability (expressing values; e.g., in PLN) some components of undisclosed (invisible) assets give, unfortunately, results that are crippled by a high degree of uncertainty.

It is worth presenting a few conclusions resulting from practices based on financial analyses of existing businesses.

1) The higher the intellectual capital, the less reliable is an overall financial analysis; that fact results from a higher error rate in the measurement of intellectual capital which is projected onto a total uncertainty of all analysis.
2) Intellectual capital (and, therefore, invisible assets) is less stable than ordinary capital; changes in the level of it are faster (e.g., many undisclosed assets depreciate rapidly; e.g., knowledge).
3) Changes in intellectual capital are more difficult to observe; the changes are often smooth (continuous); not only is it difficult to assess the size, but also to assess both the amount and direction of changes. Changes often do not result from one-off events that are easy to observe; e.g., signing a contract.
4) Ordinary financial analyses are based on historical data; the analysis of intellectual capital permits a better assessment of the prospects of a business. Changes in the level of revenue and profit result from changes in the competitive position of that which, as mentioned above, is significantly affected by intellectual capital.

Conclusions

Currently, the lack of universally accepted definitions of invisible assets, intellectual capital, and methods of assessing it cause immense analytical difficulties. But those issues (at least some of them) have been discussed and analysed for years as part of a strategic analysis of a business. The analysis of invisible assets should be an indispensable component of any financial analysis. Currently, the financial statements of businesses (e.g., companies listed on the Warsaw Stock Exchange) contain more and more information on intellectual capital, even though that does not result from a clear obligation in law. However, of note is that the principle of superiority of content over the form, which obliges a business to disclose business resources and events in accordance with the commercial content and the reality of them, and not only the legal principles [23].Today, an analysis of invisible assets (especially, so-termed external) is used to a limited extent, primarily in purchase and merger transactions. Of course, businesses in activities devote a lot of attention to the collection of some components of undisclosed assets (but that is often selective; e.g., image building), but often there is no holistic view on the issue. This is because of a lack of a strategy for building total intellectual capital and planned investment in acquiring, accumulating invisible assets or, not least, rebuilding and protecting that which is already owned against depreciation. One of the reasons for that situation is the lack of simple and effective (in terms of time and costs) measurement tools: that do not provide relevant management information to management bodies of a business [24].

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