Capturing Organizational Dynamics by Using the Dresdner Reference Model: A Valuation Approach

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Abstract: In our paper we focus on merging two analytical approaches for evaluating mid-term strategic and financial viability of medium sized enterprises. For the first time we tried to apply a newly created methodology called the Dresdner reference model. By taking into account a large empirical research sample of German SMEs we suggest using generic discounted cash flow models as a tool to cope with identifying the principal factors driving and sustaining the firm's competitiveness and value. In the following methodological analysis we identify the success factors of medium-sized industrial companies located in the region of Dresden, Germany, draw implications for correctly applying the well established discounted cash flows models and conclude by deriving a basis for creating an early warning tool supporting preventive value sustaining managerial strategic decision making.

Keywords—Business valuation, key performance indicators, reference models, Success factors

I. INTRODUCTION

HE valuation of Small and Medium Sized Enterprises T(SMEs) belongs to major assignments for consultants in Europe. This occurs primarily for the purpose of change in the equity ownership and for the purpose of managing the business by focusing on value creation. Since these companies are almost never public, a model of income based valuation is inevitable to assess the real (fair) value of the enterprise and its equity (terms firm, enterprise and company shall be interpreted equal).

Both IFRS (in the Framework) and U.S. GAAP (in SFAC 1) have identical objectives focused on the providers of capital. Financial accounting, however, cannot provide its users with anticipative forward-looking data used by valuers for the purpose of income based valuations [1].

As we will present below, the SMEs located in the region of Central and Eastern Europe face some additional specific issues arising from the transition from a central planned economy towards a free market system. This happens additionally to the fierce global competition from

internationally active companies. Thus, the complexity of the environment in which the manufacturing SMEs in the Saxony region are operating is slightly different and asking for indepth research of factors driving the success of these companies. The major part of the field research and its evaluation and summarization has recently been undertaken and presented in [2]. By identifying the major success factors of the industrial manufacturing companies in the region of Dresden we can apply the findings in the form of a reference model for the sake of financial planning and deriving of specific basis of value.

Therefore, we decided to further extend the application and use of the Dresdner reference model as originally introduced in [2] and put it into connection with modeling the value of a company. This article defines the use of the Dresdner reference model and identifies possible additional extensions the empirical data and information gathered by the field research may have in the area of business valuation and subsequently financial reporting (particularly in terms of IFRS 3 and allocation of goodwill).

II. RESEARCH METHODOLOGY AND DESIGN

Success factors and early warning systems are assigned to the strategic management and controlling and date back to Igor Ansoff's work of the 1970s and the development of the "concept of weak signals." For the mid and long term strategic management of a company it is crucial to be aware of its strengths and weaknesses as well as the business environment (potential opportunities and threats). The formulation of the business strategy might be based on a set of information, the so-called success potentials (see [2] p.28). The decision about the future business strategy will initiate substantial implications on the financial situation, financial needs, the capital structure, redistributable free cash flows and in the end the equity value of the company.

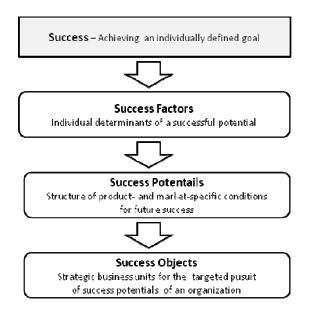


Fig. 1: Success Factors, -potentials and Objects [2], p.30

By valuing SMEs in the region of Central and Eastern Europe such a reference model has been missed and the prognosis, and to the prognosis related financial plans, had to be crafted according to the company internal data. The problem is that the valuer had only a limited possibility to prove whether these statements have or could have some relevance or whether they are for various reasons over optimistic or over pessimistic.

The research conducted in the Dresden region provides a wide data set of factors which proved important for achieving and sustaining success and, most importantly, uncovered their relative importance from the point of view of the top executives of the companies. These data and the quality of such data have not been accessible to business valuers yet. As it will be shown below, the practical relevance is immense since the connection of the Dresdner reference model with the generally applied discounted cash flows models for equity valuation can help us fine-tune the parameterization of the models (free cash flow, time scale of the planning phases) but also can us help choose the appropriate planning method by identifying the business model of the evaluated company and relating the business model with the financial and operational parameters of its direct competitors.

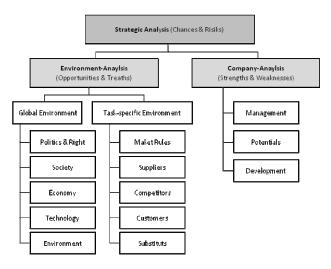


Fig. 2: Analysis of Environment and Company [2], p.32

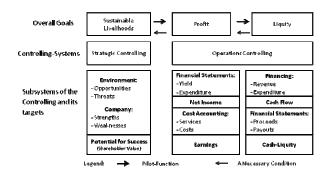


Fig. 3: Subsystems of the Company's Success [2], p.31

The Company as a Vital Living Organism (Amoeba Model)

The basic research outline has been inspired by the concept of fractal organization of Warnecke [3]. To take advantage of the interaction of the leading operational and financial indicators for industrial practice, a company can be viewed as a living organism in the form of an amoeba (see [2] p.106). Like any living organism (amoeba) a company must distinguish the relevance of inputs on the basis of a certain self-knowledge, which is advantageous for self-development and avoidance of unnecessary dangers. Only in this way an organism can grow in the ever-changing environment and secure its sustainable existence.

A company moves accordingly as a "multidimensional" living organism in a complex and dynamic environment consisting of different markets. This is the "sleeve" to the outside world, the strategic management (outer shell amoebas), which should register - when a relevant change in the environment (opportunities and risks) occurs – "sense" in the form of an early warning. The "sense", however, has to be simultaneously directed inwards, since also local changes (strengths / weaknesses) can lead to new opportunities or threats.

In this context, findings and requirements for an action by formulating a business strategy can be derived by understanding the "protective skin" to the core operational elements of the company (internal amoeba nucleus).

By causing changes in the company itself there is a chance, these actions will lead to growth and risks avoidance and better corporate control. This requires an active ongoing evaluation of the company and direct implementation of the appropriate adaptation and mitigation policies.

Research Development and Scope

The early warning system project was developed in five phases (in detail see Fig.3). In the first phase, the scientific basis (literature review) was reviewed and analyzed. Then there followed an inquiry from the perspective of professionals from the corporate environment (expert interviews). The opinions and experiences of the affected contractor / spillways (entrepreneur interviews) were gathered and summarized. The obtained results were subsequently discussed with experts and entrepreneurs from the analyzed industry in a workshop. The aim was to evaluate the previous project results and to simultaneously create a basis for the subsequent written survey of the data gathered. This served as a basis for creation of the models of behavior and managerial attitude. Finally, the theoretical models and empirical findings were merged into an overall reference model (in more detail see Fig.7).

a)	Literature Analysis – study of 75 sources (books, Internet, magazines, newspapers)
b)	Interviews 17 Experts (tax lawyers, consultants, professors, etc)
c)	Interviews with 20 managing directors of SME's
Result:	Creating Draft Model of Reference
d)	Workshop with experts and managing directors to weight the results
e)	Written questionnaires with 70 experts and managing directors
Result:	The Dresdner Reference-Model

Fig 3: Structure and project development, own representation

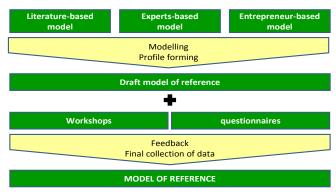


Fig. 4: Project Schedule [2], p.51

As part of the literature, 75 sources (books, magazines, Internet, etc.) were examined for viability factors. From this initial phase, the first preliminary reference model was created.

In the two subsequent stages of the project, interviews with 17 experts and 20 entrepreneurs were carried out in the form of structured interviews. In selecting the experts, the main focus was put on the qualitative design of the group of executives and their duties and insight into many areas of business. The emphasis was on the selection of contractors / entrepreneurs in the area of manufacturing industry in mechanical engineering. The goal of both rounds of the structured interviews was to identify the "success factors" in terms of doing business in the current environment. In order to make a close examination of the experience of the executives within the sample group possible and in order to gain an insight into the coping and coping strategies of the respondents, the well established and recognized research methods based on the concepts of "narrative interview" ([4], p. 283ff.) and "Critical Incident Method" ([5], p. 327) were used. To evaluate the content the interviewers were repeatedly listening to the conversations and transferred the information gained into the core statements of the success factors of the companies.



Fig. 5: Level of Model [3], p.18

The starting point for the study was the level model for WARNECKE. With this model, a company from different perceptions is described clearly. The research was caused by the increasing complexity in the enterprise; e. g. globalization means must be found in a disordered environment the domestic and external influences as an advantage for company. The insecure environment conditions should be used to avoid neglect and recklessness from the company management and should be recognized in their own and specific ways. The pattern of recognition should therefore be named as a partial pattern.

WARNECKE defined the fragment itself as "an individually functional unit of the environment where the targets and performance are to be described without ambiguity. These are to organize and optimize themselves and are followed by goals of the company without interventional feedback. The partial

enterprise is an open system, able to set its goals in its individual parts (fragments) and therefore functions as a living organism [3]."

WARNECKE describes a factory as "a socio – technical system" which is able to develop in an environment if various aspects are taken into consideration and if it is able to look for its dynamic overview and the reduction within the complexity as well as to pay particular attention to them.

Culture Levels

"The enterprise can be seen as a cultural and social complex, as a living organism with its own values and directions of development, of which the individual part can be analyzed [3]." The proceedings are to be carried out throughout implementing innovational agenda of strategic visions and their particular developments in the environment in which they are reflected.

Strategic Levels

"The strategic aspect of entrepreneurial interaction reflects the general frame of business within itself and therefore a large number of progressive decisions are to move the company forward. The absolute necessity to implement the strategy – i.g. setting particular goals – is based on scanning the situation which can only be applied if competition within certain rules is expected [3]. If there is a plan to set a future successful business, we also need to show more aspects of the output and its usage.

Socio-informal Level

"This level shows specific aspect of team work. Mutual cooperating offers goal-setting decisions which include the sociology and psychology in the interaction among people sharing contacts and taking part in the final outcome of the process [3]." "This gives us the base for a description of individual behavior in people with different cultural background [3]." On the same level the target of a partial business is not seen by people as "cooperation" only, but also as "being active and diligent co-workers, co-thinkers, copilots, co-philosophers, co-advisers, co-decision-makers and a team of scientists [3]."

Economy-financial Level

Basically, partial enterprise is a prevailing structure in its process of performance-giving [3]; it offers a perfect base for the usage of costs calculation. This procedure is only to be used where it is considered sensible. Thus we have an earlier possibility of creating a budget where individual branches can decide on their individual way of using the money and how they can work with it.

As we see the structural division into parts of the enterprise during the process of performing, we may receive good conception of the work to follow on the costs calculation. This can only be recommended as a way to create a single standing structure where it believed to be functional. Moreover, the realization of the budget is set where the branches are able to use it as individual and reliable units.

Level of Information

With the growth of information technology is it now possible to work in a much larger scale of a workload and see through individual data concerning other interested parts, co-workers and receive as well as search for information necessary to the proceedings of our business. This also means a certain danger to the business due to the overload of information used in the business and therefore useful knowledge remains covered due to the amount of irrelevant or incorrect details. To avoid the risks of wrong usage of data output, we are to apply the so-called Hol's principle. With that, we can be more efficient while using the available data.

The Level of process and material flow

Here are the particles or the manufacturing within the enterprise supervised so that we cover our product manufacturing as well as production in general from the important aspects of surveying. Here we also must pay more attention to the dangers of possible narrowing of the view due to the" influence of changeable data, neglect of differences in strategies, economy or in culture, e. g. they remain completely unobserved [3]."

The feedback would therefore be negative. If a dynamic and optimum process is wished for, the integration of directing the process and product- making must be united with the demand of the customer as well as the provider must be taken into consideration, with individual attitudes to the pros and cons of the proceedings in the particles of the manufacture observation. The stabilization of clearly listed steps in the process with a lower level in the complexity as a core and the adequate aspects of the six above mentioned levels lead to the awaited success.

Important aspects offering substantial solutions are the strategic goals of the entrepreneurial, cooperative and performance-oriented process [3].

Creating a theoretical Model

An amoeba, literally speaking, is a single-cell organism, living for its pure existence and showing a great capability of survival. As it is with all living organisms, its main purpose is to survive, and this is where there is an analogy between the cell and businesses. The intelligent structure uses minimum incentives and elements for its survival that means, speaking now more economically, to reach a level of sustainability (viability), profitability and a potential for better (more steady, faster or more efficient) growth in business. Here, the amoeba is used as a metaphor to describe the system of early warning procedures. The idea of the metaphorical amoeba has been transferred into an amoeba model, showing great viability, naturally avoiding risks and danger by avoiding them. As the cell is so primitive (in reality), its only defence, and brilliant one too, is to get out of the way. Obviously, there is always some environment in which things (people, companies, ideas, and amoebas) exist, and this environment presents great insecurity to one's existence (activities).

Now to a more realistic view of the amoeba model – taking a business as a living organism, we know it exists within an atmosphere of changes, dynamics and an atmosphere of the market. Here, the defence is the strategic company management. If there is a change in the environment of the organism and a EWS is activated, the well-informed and well-prepared businesses will have much better chances of surviving the "environment of commerce". The inner data of experience, success, failures within a business as well as information from outside then form the business policy, and in addition to that there is one major rule for its survival/viability of an organism – keep active movement!

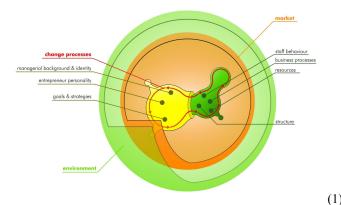


Fig. 5: The 10-D Model [2], p.109

The Final Dresdner Reference Model

By consolidating all the information a model composed of 10 dimensions and 51 factors, which are described by some 350 criteria was derived.

Dimension	Definition
Environment	Indirect company environment, which is connected through economic relations with it and has only indirect impact on the business
Market	Direct company environment, which is connected through economic relations with it and it describes the external proposition, which is present as a defined sub-segment with similar products
Goals & Strategies	Balanced orientation of a company and whose down breaking to action fields = "responsible business management and business control" as well as consideration of the stages of the Management Cycle.
Entrepreneurial Personality	These are the characteristics of the Skills and characteristics of the decision-maker.
Operational Background and Identity	That means the Company's "Personality", which is minted by its history, whose stakeholders and region.
Processes of Change	Activities, which change the elements of a company
Resources	All factors, which stand by directly for the company as achievement potential
Structure	Designed general basic conditions of a company, in which it acts
Employee Behavior	Means the abilities and characteristics of the work force
Business Processes	These are iterative activities, which use inputs with achievement potential for more significant outputs

Fig. 6: Description of the Dimensions [2], p.108

Features of Viability (10-D-Model) ([2], p.109-110)

The company viability depends on a number of influences along with the basic concept of future business. The ten dimensions (influences) here function as foundation of the business structure.

The model stands for the EWS-Concept:

As **for targets and strategies**, today, we understand that past activities (and also failures) are of great importance and must be a part of our future concepts as they too belong to the complexity of a business.

Considering **business people characters/personalities**, we need to realize that the owner is not always the person who runs the company, or at least is not the one directly responsible for all of its decisions, or, as the case may be, not even taking part in the decision-making process. Knowing this and taking it as a fact, we have to analyze and understand the reflection of personalities (their strategies, understanding, concepts, views, ideas etc.) and take them into consideration in future planning of the company and forming the core company policy.

Company background is the dimension that can be defined by company experience and identity, also the history of the business, its development. This dimension also evaluates the role of the region, stressing the fact that the company often functions within certain environments. Of these environments the region is the most important one. An important influence on business success comes from **business progress**, logically including activities of such quality that they are repeatedly implemented into the company functioning, with the individual input being developed (improved, taken advantage of) so that the outcome reaches the highest level possible.

The **structure** is the frame within which the activities are realized and also show the limits of business activities and expansion.

As the centre of business consists of various parts, **resources** need to be kept under active observation. With the help of resources, we are able to realize the potential of a business as it depends on the quality and quantity elements of business reflected in resources, covering the efficiency of workers and co-workers, their role in decision-making processes, also the human resources in the structure of company etc., phrased as **behaviour of collaborators** in the initial list of viability features. This sphere also includes company advertising policy, as there is mutual co-existence of the business potential and advertising.

As vital part of the model, there are the essential conditions of existence:

It is always necessary to know what should be changed to support or enliven the business or also changes targets and strategies obviously disappearing and dying out within the process of business; all of these are features of natural behaviour of the **market** (e.g. customers, suppliers, providers and competitors, their reliability, behaviour, also their viability). All changes within the market happen in a certain **environment** (living environment, strictly speaking as well as metaphorically), which is the reality the business operates in (there are limits of all business activities outlined by e.g. company policy, global politics, laws, ethics, EU restrictions as well as demands etc.)

And the factor involving dynamics, growth, progress and development is viewed as **process of change**. Because the market and the environment are dynamic, the aspect of change and shifting s in business has to be seen.

Model reflection

As a major part of the research depended on consulting professionals, there was a need to create questionnaires, then evaluate them, find important information and data in the interviews, get feedbacks, form the statistics and arrange a scale giving some statistic outcome of the research so that the information is valuable to the EWS software tool preparation.

Evaluation criteria

The need of precise evaluation of data led the team to creating a mathematical calculation and the concept of internal-evaluation of the company. If the software tool is to be helpful, the entrepreneur needs reliable feedback of the business. Even if the data loaded into the system was partial (for various reasons), the feedback should be accurate, reliable and complex. Therefore adequate methodology was used.

Model of Reference

The reference model is a complex of data shown in the following chart. The principal model has been developed with

the use of professional literature, professional advice and company counselling.



Fig. 7: Dresdner Reference Model [2], p.115

The basis of success is a strong sensitivity in the field goals & strategies, strong resource base, which exerts a great influence, costumer-focused attitude, followed by structures and processes. A lower weighting was given the dimensions, entrepreneur, operational background, change processes and employee behavior. In sum it can be concluded that there are no major gaps (except operational environment with a very low relevance) between the different pillars of the company's success.

Early Warning Systems

Early warning systems uncover early signs of both, risks as well as opportunities for company growth. The strategy of developing early warning systems started as a system oriented on spotting risks, later developed into its advanced formula concentrated on risks *and* promising opportunities, and nowadays we can see the complex system of early warning consists of spotting risks and promising opportunities together with diversions and business strategy recommendations. Although our base is in German, the phrase of early warning system is well known to English speaking professionals (economists, business people, salespeople, entrepreneurial people etc.). The phrase needs no further explanation of what its main purposes are as it is so clear and accurate. In German, we speak of "Fruehwarnsystemen". Up to present, there are three generations of early warning systems in existence.

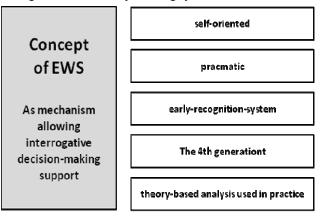


Fig. 8: Methodical Classification [6]

Early Warning Systems in middle-sized companies

Originally, and logically too, first early warning systems were used with large corporations. Large companies gave enough time to foretell the company future, it also gave more useful data, more analogies to previous activities, and it was possible to give ideas for business in 5 years or even longer periods of time in which the dangers can be prevented. For obvious reasons, we are interested in middle-sized companies, as they may find the system very useful. In today's situation of economic insecurity as well as crisis it seems logical to save companies which are able to be sustained and survive, as their business is useful, profitable and promising, often irreplaceable. This area has not been so often uncovered, so middle-sized companies offered a chance for our team to get absolutely new information on new strategies and alternatives.

- 1st generation too, first considered the information on functioning of the business and gave an outcome in forms of forecast and evaluation. This was oriented on key data and extrapolation.
- 2nd generation added external influence on business activities, oriented on indicators to make early warning more elaborated by using out-of-company data to make resolutions more valuable
- 3rd generation added extra factors to the previous two items. It also considered the importance of dynamics of changes vital for the company progress and it valued the minor aspects and weak signals to make the analysis more detailed.
- 4th generation (it is where we base our research and new model of helping businesses) is a strategy combining all three previous generations into one, more complex, theory-based, operative, multi-dimensional early warning system.

The Business Valuation Perspective

The implementation of a successful business strategy directly affects the value of a company. Here there are two basic perspectives to view the composition of the value of a company:

- the perspective based on measurable fundamental value drivers (sales and its dynamics, operating profit margin, CAPEX, free cash flow, discount rate, duration of the company),
- the mathematical, or computational, perspective affecting the composition and parameterization of the valuation model.

As we can observe, the identification of the major factors making a manufacturing business successful can be used as a reference and compared with the strategic perspective of a comparable company (in terms of the business model and industry).

Discounted Cash Flows (DCF) Models

Let us briefly summarize the generic DCF valuation models widely used for valuing manufacturing companies (in detail with an extended overview of the related literature see [7]).

1. Simple perpetuity

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FWS as an Early-Warning-System of 4th Generation

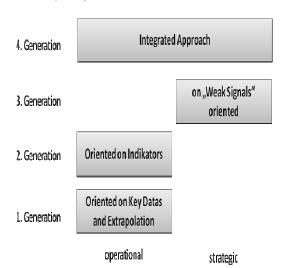


Fig. 9: Self-Oriented Early Warning Systems [2], p.42

2. Gordon Formula (constantly growing perpetuity)

Continuing Value (2) $= \frac{FCF_{T+1}}{i_k - g},$ where $= Free cash flow in the first year of the second planning phase,
<math display="block">i_k = Discount rate,$ g = Growth rate.

3. Parametric Formula

Continuing Value (3) where $=\frac{KPV_{T+1}\left(1-\frac{g}{r_i}\right)}{i_k-g}$ Net operating profit corrected for noncurrent items in the first year of financial prognosis, r_i Return on net investments, i_k Discount rate, Growth rate. g

These models are based on the assumption that a company evolves in a standardized manner over time. The standard situation encompasses four market phases starting with the introduction and going until the stagnation of the company (in detail with an extended overview of the related literature see [7]).

According to the evaluation of the industry competitive dynamics, a valuer has to first derive the prognosis of sales, its dynamics and the related investment needs, financing needs and the appropriate discount rate. A very important, yet arbitrary, decision must be taken in terms of identifying the future growth (or decline) phases of the evolution of the company to be valued. Two and three phase's models are generally applied:

$$H = \sum_{t=1}^{T} FCF_{t} (1+i_{k})^{-1} + \frac{PH}{(1+i_{k})^{T}}, \quad \text{where}$$

$$T = First phase length in years,$$

$$PH = Continuing value,$$

$$i_{k} = Discount rate,$$

$$FCF = Free cash flow,$$

$$H = Company value (entity or equity).$$

The three phase DCF model:

$$H = \sum_{t=1}^{T_1} FCF_t (1+i_k)^{-t} + \sum_{t=T_1+1}^{T_2} FCF_t (1+i_k)^{-t} + FCF_{T_2+1} (1+i_k)^{-T_2} i_k^{-1}$$

$$T1 = \begin{array}{ccc} & & & & \\ & & & \\ & & & \\ & & & \\$$

Conclusions

Companies are forced to recognize early systematic changes with a corresponding advance in order to gain adequate scope for developing appropriate strategies. The time factor has therefore primary importance. The relevance of the Dresdner model for the purpose of the company viability and income based business valuation can be seen primarily in the following areas:

- Better understanding and better evaluation of the currently applied business model of the company being valued,
- Supporting to avoid risks or at least to reduce their impacts and to use chances for increasing the middle-term company viability
- Helping the valuer assess better the strengths and weaknesses of the firm in order to decide about the fulfillment of the going-concern principle of the company and to choose the appropriate basis (standard) of value,
- Helping the valuer decide about the lengths of the first (or explicit) planning phase of the financial plan (as shown in the generic model above),
- Choosing the appropriated data sets and methods for undertaking the strategic analysis and prognosis of sales serving as a starting point for crafting a financial plan from which free cash flows distributable to the company owners will be derived,
- Helping the valuer better estimate the predicted growth rate
 in the second and third phase of the financial plan having a
 major impact on the final numerical result of the income
 based valuation, particularly by using the Gordon discount
 model or simple perpetuity for the second phase,
- Picking the appropriate peer group of comparable publicly traded companies in order to compare the income based value with the value of companies already valued on the public capital market.

There are further overlappings which should be considered in subsequent research, e.g. construction of a probabilistic model incorporating the 10 dimensions of the Dresdner reference model and its empirically determined relevance into a framework for financial business planning and evaluation of the anticipated success of the expansive business strategies being undertaken.

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