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Perceived Environmental Uncertainty in scenario planning

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ABSTRACT

Scenario planning is a strategy tool with growing popularity in both academia and practical situations. Current practices of scenario planning are largely based on existing literature which utilises scenario planning to develop strategies for the future, primarily considering the assessment of perceived macro-external environmental uncertainties. However there is a body of literature hitherto ignored by scenario planning researchers, which suggests that Perceived Environmental Uncertainty (PEU) influences the micro-external as well as the internal environment of the organisation. This paper reviews the most dominant theories on scenario planning process and PEU, developing three propositions for the practice of scenario planning process. Furthermore, it shows how these propositions can be integrated in the scenario planning process in order to improve the development of strategy.

1. Introduction

Scenario planning is a strategy tool whose use has increased dramatically in the last decade [1] and is one of the most commonly used tools in strategy development [2,3]. Scenario planning is a strategic foresight technique which is distinct from the others because it addresses uncertainty and not risk. Tsoukas and Shepherd [4] explain that scenario planning deals with those factors of the environment that there is low '*stock of knowledge on which to draw for understanding action*' and low '*knowledge base for anticipating important events*' in contrast to other foresight techniques such forecasting, analogical reasoning and contingency planning.

The majority of the existing methodologies [5–9] argue that the practice of scenario planning is based on Shell's case studies as recorded by Wack's [10] seminal paper. For all these methodologies, the basis of scenario development is the assessment of the macro-external environment which is considered the greatest source of environmental uncertainty. Nevertheless, there is an area of literature which highlights that perceived uncertainty is not only created by the macro-environment, but managers also perceive uncertainty created by factors of the micro (-industrial) and the internal environment. The present paper seeks to demonstrate the necessity to incorporate all levels of PEU in strategy development when using scenario planning, in order to enhance the process of strategic decision making.

The paper is divided in two parts. The first part is structured around the development of three propositions which are based on gaps identified in the literature of scenario planning theory and practice. To identify the gaps in the literature and practice of scenario planning, initially the most dominant theories on scenario planning literature are reviewed. Then PEU is presented, examining the evolution of the concept and the most recent developments and studies. The following section presents how the existing theories on scenario planning address elements of the PEU theory. The second part of the paper

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presents an integrated scenario planning process which incorporates the three propositions developed in the scenario planning practice.

2. Theoretical background

2.1. Scenario planning process

Recent reviews [11,12] of the history of this strategy tool reveal that its origins are in the military planning [13]. The basic idea behind scenario planning is to be used within strategy teams to enhance strategic thinking and to address uncertainties in the external environment. Van de Heijden et al. [14] highlight that scenario planning's value lays within the process of developing alternative futures and not necessarily within the narratives produced, a feature that justifies the learning character of the exercise [15].

Considering the evolution of the scenario planning [11], this paper follows the scenario planning literature of the 'intuitive-logic models' school, which considers scenario planning as a strategy making exercise. Most of the authors [5,7,16,17] who were influenced by Shell's scenario planning, suggest a similar process which involves: (1) defining the scope of the exercise, (2) identify factors of external uncertainty, (3) reducing or clustering the uncertainties, (4) developing initial scenario themes, (5) checking for internal consistency, (6) expressing scenarios in narratives, (7) assessing the impact of scenarios and (8) develop and select potential strategies.

The majority of published scenario planning processes [16,18] makes an explicit link with strategy formulation. Some authors would consider scenario planning to be about strategy development only; for example MacKay and McKiernan [19] define scenario planning as '*a strategy process widely regarded* [. . .] *creative and innovative*'. Wilson [20] identifies four types of scenario planning[1] according to its sophistication. The most basic approach, scenario planning as 'sensitivity/risk assessment', is used to explore potential outcomes from specific strategic decisions. A more sophisticated approach, scenario planning as 'strategy evaluation', would be used to examine the fitness of existing long term strategies against future scenarios. In this approach, the impact of scenarios would be considered in terms of '*opportunities, threats and comparative competitive success or failure*' in order to identify new potential strategic options. At more advanced level, 'planning-focus scenario', the robustness of the strategic options developed is tested against the scenarios developed. At the most sophisticated level – scenario planning as 'strategy development' – the impact of scenarios is examined against the key elements of each strategic option so as to determine their optimal setting.

Chermack and Lynham [21] provide an extensive review of the definitions and outcomes of scenario planning. The majority of definitions agree that scenario planning is about creating images of the future in order to deal with uncertainty; however most of them do not link scenario planning and strategy development. The same authors observe that there are four different categories of potential outcomes from the scenario planning process: (i) change thinking, (ii) narratives or stories about the future, (iii) improve decision making and, (iv) improve learning and creativity. Van der Heijden [22] classifies scenario based work according to the purpose of the intervention; only one of the four purposes identified by him, is directly linked to strategy development, the other three concern the efforts of the organisations to enhance their sense making, anticipation and organisational learning. In addition, MacKay and McKiernan [23] propose that scenario thinking should be distinguished from scenario planning, because '*the process of building scenarios has value that goes beyond that of a mere planning tool for improving foresight*'. Similarly, Galer and van der Heijden [24] suggest that there are a number of intermediate activities between scenario development and strategic options development. Burt [25], in alignment to van der Heijden et al. [14], describe very clearly the scenario planning process to be completed with developing narratives and examining the '*structural insights and potential discontinuities*' as well as modelling the '*system behaviour*' in terms of the variables which are included in the scenarios. In essence, it has to be recognised that the existing scenario planning processes do not provide adequate explanation as to how scenarios are used in strategy making. For this reason, it is proposed we distinguish that scenario planning has two main outcomes: scenarios and strategies.

Proposition 1. Scenario planning should be structured in two activities: (i) scenario development and (ii) strategy development.

Considering the eight steps in the scenario planning as described above, the first six stages are the scenario development, while the last two are the strategy development (Fig. 1). The two activities are strongly linked, however it is possible that the development of strategies is not merely a result of scenario planning as it is common for organisations to use combinations of management methods and strategy tools to inform their decision making.

2.2. Perceived Environmental Uncertainty

Given that scenario planning is a strategy tool which is used to deal with uncertainty, it was deemed appropriate to explore the theoretical background of uncertainty. Uncertainty and Perceived Environmental Uncertainty (PEU) have been under investigation both at a philosophical [26–28] level for almost a century. Knight [29] was one of the first researchers to

[1] Wilson uses the term 'scenario thinking' instead of 'scenario planning'.

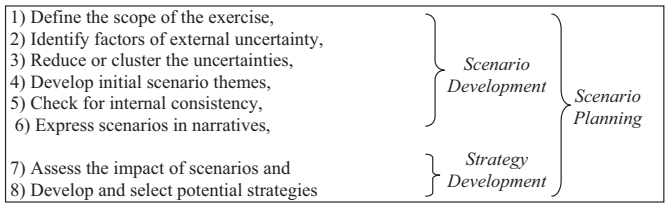

Fig. 1. Scenario planning process.

conceptualise uncertainty and to distinguish it from risk, as he explained that uncertainty is created when it is not possible to express 'randomness' in terms of mathematical probabilities, while in risk it is possible to assign mathematical probabilities. Knight's [29] definition expresses the view of economists on uncertainty, however, as Miliken [30] observes, there are two more widely cited definitions; uncertainty is created: (i) by the lack of information, and (ii) by the inability to predict the outcome of a specific decision made.

Early researchers developed some generic taxonomies of the environment as a source of perceived uncertainty; Dill [31] proposed that PEU can come from *general* environment, referring to those uncertainties that are not closely related to the organisation, while the *task* environment consists of the environmental uncertainties with greater direct impact on the organisation. The same author has developed one of the first conceptualisations of environment that had practical value, who suggested that the environment is determined by four factors: customer, suppliers, competitors, regulators. Duncan [27] was one of the first authors to differentiate between internal and external environment; the external environment is determined by factors related to customers, suppliers, competition, socio-political and technology; while the internal environment is comprised by personnel characteristics and skills, functional and staff units and organisational level components (referring to objectives, goals, processes for group integration and nature of product or services). Miles and Snow [32] suggested that perceived uncertainty in the environment can be created by one or some of the following factors: governments, markets, regulatory agencies, suppliers, customers, competitors and trade unions.

A significant contribution in the field of PEU has been made by [33,34]. Miller [33] developed a conceptual framework for uncertainty which identifies three levels of PEU: (i) *General Environmental Uncertainties*, which refer to the uncertainties in the macro-external environment such as politics, government, economics, social and natural uncertainties; (ii) *Industry Uncertainties*, which refer to the market competition uncertainties such as input market, product market and competitive uncertainties; and (iii) *Firm Uncertainties*, which refer to operational, liabilities, R&D, credit and behavioural uncertainties. Miliken [30] has identified three types of PEU: state, effect and response uncertainty; *state* uncertainty refers to uncertainty created by the external environment, as described earlier as macro and micro external perceived uncertainty; *effect* is the uncertainty about the impact of the external uncertainties to the internal of the organisation; and *response* is the uncertainty which concerns the impact of external and internal uncertainties on the strategies that the organisation will implement.

A number of PEU studies [35–37] have examined all three levels of PEU to determine whether there is a significant influence in the strategic decision making by not only the macro but micro and internal uncertainties. Freel [37] has found that in some cases (industry related) micro and internal uncertainty had greater impact on innovation. This demonstrates that managers are not only concerned with the macro-external uncertainty but also that industrial and internal uncertainties are equally important. At the same, existing literature on the assessment of uncertainty and particularly on scenario planning seems to ignore the contribution of PEU literature.

2.3. Scenario planning and Perceived Environmental Uncertainty

There is a common understanding that scenarios are built on uncertainties. However, there is no commonly accepted definition of uncertainties or how these should be expressed within scenario development. One fundamental question, that none has considered yet is whether there are any restrictions on the identification of uncertainties and whether scenario development should consider both macro-external and micro-external uncertainties together. There are contradictory views on this; for example Schwartz [17] is the only author to suggest considering both macro and micro external environmental uncertainty but at different stages of the process; at the second stage in his eight stages process, he proposes the examination of the 'key forces in the local environment' which should be considered in conjunction with the 'driving forces' (in the macro environment), taking place at the third stage. It has to be noted that Schwartz is an influential author for the scenario planning literature and his methodology has been adopted in a great number of studies [38]. A number of authors (such as O'Brien et al. [39]; Drew [40]) suggest the examination of both levels of PEU simultaneously. Drew [40] uses them simultaneously because his approach is based on an integration of the Schwartz [17], Van der Heijden [7] and Schoemaker [16] approaches.

Very few attempts have been made to link the macro-external with the micro and in the internal environment. Schoemaker [41] suggests an integrative 5 stage approach for the development of strategic options using scenario planning, which combines: (i) a 10-steps process scenario planning process based on macro-external environmental uncertainties [6] and industry related factors; (ii) a segmentation analysis and an assessment of the 'competitive forces and barriers'; (iii) an

analysis of the resources and capabilities; (iv) using the insights gained to develop a 'strategic vision', and; (v) the identification of strategic options suitable for the 'strategic vision'. Van Notten et al.[2] [42] suggest that it is possible to develop scenarios based on the micro-external environment only. Nevertheless they explain that the boundaries between macro and industrial environment are vague and there are not really any case studies which explicitly do that.

On the other hand, some authors [25,43,44] consider scenario planning to be engaged to macro-environmental uncertainties only; similarly Ramirez and Van der Heijden [45] clearly suggest that the current practices of scenario planning are based on the examination of the macro-environmental uncertainties '[scenarios] *are typically deployed to identify and analyse the driving forces enacting from the contextual environment*'. Furthermore, Cornelius et al. [46] show that Shell's scenario planning history has only dealt with macro-external environment uncertainties.

Wright et al. [47] drawing from Burt et al. [9] highlight that there are significant weaknesses in using 'taxonomic classification' such as PEST, though they highlight that their approach involves the identification of factors from the macro environment. Burt et al. [9] highlight the limitations of using PEST (and its derivates) as the external environment situation analysis, nevertheless they acknowledge that this framework can be utilised in scenario development to ensure holistic/systemic coverage of the factors of future uncertainty. Ramirez and Van der Heijden [45] have recently highlighted the need for scenario planning interventions to develop more strategic options considering the industrial environment, since that is the 'battlefield' of competition. However, they do not provide any specific methodological suggestions as how this can be achieved. The review thus far, indicates that the scenario planning literature provides contradictory suggestions on which levels of perceived uncertainty to be included in the scenario development and at the same time, a series of studies reviewed from other disciplines indicate that all levels of perceived uncertainty are influential. This paper advocates the examination of all levels of uncertainty. nevertheless, in alignment with Narayanan and Fahey [43]; Burt [25]; Carns et al. [44]; Ramirez and Van der Heijden [45] propose that the different levels of PEU are examined at different stages of the strategy development.

Proposition 2. The development of scenarios should be based only on macro external uncertainties.

Very limited work has been recorded on the internal perceived uncertainty for the development of strategy in scenario planning. Ringland [38] claims that internal scenarios '*take factors under the control of the organization into consideration*', however, her study does not provide any additional insights into internal scenarios and how they are integrated into the scenario planning process. Furthermore, Miller and Waller [48], with the aim of incorporating all levels of PEU into the assessment of the uncertainty, have developed a conceptual methodology which integrates scenario planning and real options. This approach proposes the examination of PEU within the scenario development as well as within the 'risk exposure' assessment, but they do not provide adequate guidance on how to integrate these two activities. Schoemaker [16,41] and O'Brien [8] have both proposed a strategic analysis of internal environment of the organisation (with resources analysis and strengths and weaknesses identification) in order to develop strategic options. Both these methodologies have provided significant contribution in the field as they have made the first attempt to link scenarios of the external environment with the internal of the organisation, but they have not addressed the perceived uncertainty on the internal of the organisation. In essence they have both assumed that the internal environment does not change in the future and the scenarios will have no impact on the internal of the organisation. Therefore, the third proposition suggests incorporating the other two levels of perceived uncertainty in the decision making.

Proposition 3. Micro and internal Perceived Environmental Uncertainty should be considered when developing strategies based on scenarios developed.

3. Integrating PEU theory in scenario planning

This section presents how the three propositions can be realised in scenario planning practice. It presents what changes should be introduced in scenario development and strategy development processes in order to incorporate all levels of PEU. The three propositions developed in this paper, suggest that the development of strategy based on scenario development should incorporate all three levels of uncertainty and at the same time the development of the scenarios should only be based on macro external perceived uncertainties. Therefore, the integrated process developed in this article suggests changes both in the scenario development and strategy development processes.

According to the division suggested in Proposition 1, for the *scenario development* processes, changes are proposed for the Stages 1 and 2 only; the majority of the changes concern the *strategy development* as both Stages 6 and 7 will be influenced. In Stage 1: *define the scope of the exercise* authors like Schoemaker [16] and Van der Heijden [7] state that the participants in the scenario planning process should define the scope of the intervention and decide on who should participate. In this stage, it is expected [49] that those involved will develop a good understanding of the company and the key trends [17] in order to be able to define the planning horizon.

[2] Scenario planning researchers like Van der Heijden [7]; Van Notten et al. [42]; Ramirez and Van der Heijden [45] call the macro-external environment 'contextual' and the industrial environment 'transactional'.

The approach suggested in this paper, recommends that this stage is enhanced with the addition of a strategic analysis of the *current* external and internal environment. The participants should analyse the current micro environment of the organisation; there are several approaches and strategy tools for this scope [49], the most popular one is Porter's Five Forces [50], which provides an overview of the industry in terms of five dimensions: (i) new entrants, (ii) substitutes; (iii) customers; (iv) suppliers and (v) competitive rivalry. Concerning the strategic analysis of the internal environment, this is conducted so as participants to develop a greater understanding about the organisation and the source of competitive advantage. According to Miller [33] and Freel [37] internal PEU concerns the resources and competences of the organisations and particularly their sustainability over time. To examine the resources and competences, the present methodology incorporates the internal analysis as proposed by the Resource Based View [51].[3] Barney [51] quotes Daft [52] in order to define resources as all '*assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve efficiency and effectiveness*'. Barney [51] also explains that resources are the equivalent of 'strengths' from SWOT analysis from the traditional strategic analysis approaches; while Wernerfelt [53] suggests that resources can be both strengths and weaknesses depending on their impact on competitive advantage. Listing the resources and competences is not strategic analysis, at this stage, it is important to determine which of them contribute to the current competitive advantage.

In Stage 2: identify factors of external uncertainty. All 'intuitive logic' approaches suggest that the participants brainstorm factors of external uncertainty. As discussed in the previous section, there is no consensus as to what the factors of uncertainty could be. Following Proposition 2, at this stage the brainstorming of external uncertainties should be concentrated only on macro external uncertainties. It is accepted that the participants of the scenario planning intervention may have uncertainties from micro environment, which the facilitator/leader of the process should explore whether these are resulted by one or more macro external uncertainties. The uncertainty in the micro external environment will be addressed at a latter stage in conjunction with the scenarios developed.

No changes are proposed for the other four stages of scenario development, Stage 3: reducing or clustering the uncertainties, Stage 4: developing initial scenario themes, Stage 5: checking for internal consistency, Stage 6: expressing scenarios in narratives. It is expected that the strategic analysis conducted in the Stage 1 would have enhanced organisational learning [54,55] and participants' understanding of the company and will have a positive influence upon all the remaining stages (3–6) of the process.

Upon the completion of the scenario development stages, the participants will have engaged in a strategic conversation [7] and will have created a number of scenarios as alternative plausible images of the future. In addition, in most cases the scenarios will have been expressed as narratives. The purpose of the narratives is to tell the story of a future scenario [56] in order for those involved in decision making to develop the right mindset for anticipating uncertainty within strategising. The next two stages of scenario planning concern the development of the strategy based on the scenarios developed.

Stage 7: assessing the impact of scenarios, is generally treated as a 'black box' in the existing literature or as a 'common sense' process as the descriptions and guidelines provided are not very specific. For Mercer [57] this stage concerns the examinations of the issue that arises for the organisation from each of those scenarios. Korte and Chermack [58] describe this as the stage where existing strategic decisions are '*wind tunnelled through the scenarios*' to examine their appropriateness. Schoemaker [59] suggests the 'translation' of scenarios to implications for the company has to be mostly intuitive '*through the mind of the manager*' explaining that this is the actual benefit of scenario planning: '*to help managers think about risk*[4] *in a more systematic fashion*'.

The integrated approach developed in the present article, proposes that this is the stage where the participants of the organisation should examine the impact of each of the scenarios developed on the other two levels of uncertainty: micro and internal. To do so, the participants of the scenario planning process would need to utilise the additional strategic analysis introduced in Stage 1. To examine the impact of the scenarios on the micro environment, the impact of each scenario on the Five Forces which define the micro environment should be examined. To do so, an impact matrix is proposed (Fig. 2) which depicts simultaneously the current magnitude of each force and their potential strength in each scenario.

Internal uncertainty should be addressed by examining the sustainability of the most important resources in each scenario. The most important resources have already been determined in Stage 1. In this stage, the participants of the scenario planning process should examine whether resources which contribute to the competitive advantage will remain sustainable in each scenario. To address the sustainability of the resources the most effective approach is to use the VRIO model from the Resource Based View. According to Barney's[5] [51] there are four criteria for assessing the sustainability of resources:

(i) *Valuable*: resources have to support the development and implementation of organisational strategies.
(ii) *Rare*: resources which are not common among all competitors.
(iii) *Inimitable*: resources that cannot be easily imitated.
(iv) *Organisation*: the company is organised in order to utilise these resources.

[3] It is acknowledged that there are other approaches which can be used for the internal uncertainties such as Value Chain Analysis [50] as Garg et al. [36] utilised in their research.

[4] Shoemaker [59] uses 'uncertainty' and 'risk' interchangingly in his article.

[5] Barney's [51] criteria were originally designed to assess the sustainability of the resources; however the evolution of the field [61] has expanded the use of these criteria for both resources and capabilities.

	Current	Scenario 1	Scenario 2	Scenario 3
Customers				
Suppliers				
New Entrants				
Substitutes				
Competition				

Fig. 2. Impact matrix for assessment of perceived uncertainty in the micro.

	Scenario 1				Scenario 2				Scenario 3			
	V	R	I	O	V	R	I	O	V	R	I	O
Resource 1												
Resource 2												
Resource 3												
Resource 4												

Fig. 3. Impact matrix of assessment of internal uncertainty.

	Scenario 1			Scenario 2			Scenario 3			Total
	F	A	S	F	A	S	F	A	S	
Strategic Option 1										
Strategic Option 2										
Strategic Option 3										

Fig. 4. Strategic options evaluation.

To assess the impact of the scenarios developed on the internal of the organisation and particularly on the sustainability of the resources another impact matrix should be used (Fig. 3). This matrix should help determine which of the existing strengths will remain strengths and which of them will become parities.

The final stage of the scenario planning, Stage 8: develop and select potential strategies, involves the development of strategic options, based on the scenarios developed, and the evaluation and selection of the ones to be implemented. The majority of the existing authors on scenario planning do not provide adequate information on how to undertake this process. O'Brien [8] has made a significant contribution in the field by suggesting the use of TOWS matrix; the Opportunities and Threats are those occurring from each scenario, while the strengths and weaknesses are those of the present. However, even if O'Brien's [8] recommendation has been praised [47], it has a fundamental weakness. O'Brien assumes that resources and therefore strengths and weaknesses in the organisation remain unaffected in the future. However, it is not true, as each of the scenarios would have an impact on the internal of the organisation and particularly on its resources and competitive advantage as would have been determined in the previous stage with the impact matrix (Fig. 3). It is therefore proposed that at this stage the TOWS Matrix includes the Opportunities and Threats from each scenario as suggested by O'Brien [8], as well as from the examination of their impact on the micro environment (Fig. 2); concerning the strengths and weaknesses, it is suggested to determine them from the assessment of the impact of the scenarios on the sustainability of resources (Fig. 3).

The last activity is the evaluation of the strategic options developed to select those to be implemented. A number of studies [18,62] propose the integration of decision analysis into the strategic options evaluation based on quantifying the assessment of the impact of the strategies against a hierarchy of organisational objectives for each scenario, while others [8,39] suggest that it is important to make the selection based on the robustness of the strategic options for each scenario. In the present paper, it is recommended that the robustness of the strategic options is operationalised with three well established criteria: feasibility, suitability, acceptability [63]. Johnson et al. [63] have adopted these criteria from the military practice [64]. *Feasibility* examines whether the organisation has the resources and capabilities required for the realisation of the strategic option. *Acceptability* investigates the potential outcomes of the strategic option and their fit with stakeholders' expectations. *Suitability* considers the fit of the strategic option with the positioning of the organisation in the market. These criteria are similar to Rumelt's [65] criteria for strategy evaluation but expressed in more 'user friendly' terminology. Ultimately, each strategic option should be evaluated with these three criteria for each the scenarios. Fig. 4 depicts how the evaluation of strategic options could be done.

4. Discussion and concluding remarks

Scenario planning is a learning process and as such it is essential that those participating should get the chance to gain an in-depth understanding about the company analysed. The existing literature has described scenario planning as a strategising activity which is not directly linked to the overall strategy development. This is due to the fact that most of the

relevant literature is based on practitioner based reports which tend to concentrate on successful case studies [66]. The thesis of this paper is that scenario planning should be embedded in the strategy process and should be linked to those activities for the short and medium term planning which are based on more 'traditional' strategy tools. In essence, this paper is an extension of Van der Heijden [22] proposition that scenario planning is not a strategy tool, but an umbrella of tools. Therefore, this paper suggests how to incorporate more strategy tools in the development of strategy with scenario planning.

The synthesis of the literature from a variety of disciplines has led to the development of three innovative propositions. Proposition 1 calls to recognise that the development of scenarios is not strategy development per se. The narratives created for each scenario are plausible images of the future which should be used by decision makers to envision the future and help them prepare their mindset for possible alternatives situations. This process should be linked to strategy development and the traditional strategic management literature has a number of tools and techniques that can support the development of strategy based on the scenarios created. The existing literature clearly lacks in recommendations on how to link scenarios development to strategy making.

Proposition 2 calls those involved in scenario planning to understand that there are different levels of perceived uncertainty. Macro-external uncertainty influences micro-external uncertainty as potential changes in the industrial environment will be linked to a greater changes in the macro-external environment. The second proposition has an implication for the practice of scenario planning, the narratives will not include micro-external factors. There are no studies in the literature on what constitutes good practice on narratives and moreover, there is no evidence that narratives without micro-external factors would have disadvantages in their utilisation.

Proposition 3 calls those involved in scenario planning to consider internal uncertainty, too. None of the existing methodologies has explained how this can be done. This paper does not suggest that internal uncertainty should be considered within the scenario development phase but after the development of narratives, to examine their implications in the internal of the organisation. This will potentially enhance the learning character of the intervention as it will indicate to those involved, which are the potential strengths or weaknesses of their organisation in the future.

This paper has linked the theories on perceived uncertainty from literatures which have been largely ignored in scenario planning. It has showed the lack of consensus on how to address perceived uncertainty in scenario planning and has suggested specific changes in the scenario planning process which should improve the strategic decision making. Ultimately, scenario planning is about learning via anticipating perceived uncertainty and with the approach suggested in this paper, the assessment of the macro external uncertainties addresses 'state uncertainty' in Miliken's [30] classification; determining the impact of scenarios on the micro-external and internal environment of the organisation helps managers reduce 'effect uncertainty' while the evaluation of the each strategic option for each scenario developed should help managers minimise 'response uncertainty', too. This paper is entirely conceptual and its innovations and contributions are based on the synthesis of interdisciplinary theories; future research should examine the scenario planning process suggested in this paper in real cases in order to record how these influence strategising under different circumstances or in different organisations.

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