

 ISSN NO. 2320-5407	Journal Homepage: www.journalijar.com INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) Article DOI:10.21474/IJAR01/13736 DOI URL: http://dx.doi.org/10.21474/IJAR01/13736	 INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) ISSN 2320-5407 Journal Homepage: http://www.journalijar.com Journal DOI:10.21474/IJAR01
---	--	---

RESEARCH ARTICLE

ALIGNING ENTREPRENEURIAL ORIENTATION AND OPEN INNOVATION FOR BETTER EXPLANATION OF INDUSTRIAL TUNISIAN SMEs PERFORMANCE

Chiraz Ben Salem Ben Gaied and Mahmoud Zouaoui

1: Lab. ISEFE, Management Department, Faculty of Economics and Management of Tunis,
University of Tunis El Manar, Tunisia.

2: Higher school of commerce of Tunis, University of Manouba, Tunisia

Manuscript Info

Manuscript History

Received: 15 September 2021

Final Accepted: 17 October 2021

Published: November 2021

Key words:

Open Innovation, Entrepreneurial
Orientation, Taxonomy, SMEs
Performance, Configurational Approach

Abstract

The main objective of this research is to examine the effect of the alignment as 'gestalt' of Open Innovation and Entrepreneurial Orientation on the Industrial Tunisian SMEs performance. To achieve this aim, we carry out a quantitative survey with a questionnaire distributed to 110 Industrial Tunisian SMEs and mobilize the perspective of alignment as 'gestalt' of the configurational approach. Our results reveal an empirical taxonomy which distinguishes four Tunisian SMEs' configurations named, The 'Conservative Enclosed', The 'Committed Exceptional', The 'Vigilant Receptive' and the 'Innovative Involved'. Our findings show that The 'Committed Exceptional' and 'Innovative Involved' configurations register the same high level of performance. However, the 'Conservative Enclosed' is the least performed unlike the 'Vigilant Receptive' configuration which is characterized by an average level of performance. Overall, theoretical and empirical contributions are heralded to advance the relevance of Open Innovation approach to the entrepreneurship theory.

Copy Right, IJAR, 2021,. All rights reserved.

Introduction

The unpredictable changes in the business environment, the economic crisis and the increased influence of digital culture are the starting point for the rapid expansion of the movement of search for best managerial and strategic practices that guarantee high levels of performance. Examples include Open Innovation (OI) and Entrepreneurial Orientation (EO). Thus, trapped in an unstable economic climate characterised by shortened innovation cycles and unpredictable global competition, small and medium enterprises (SMEs) find difficulties to innovate alone because of their small size and resources scarcity. This is why, there is a call to stress the importance adoption of Open Innovation approach (Bigliardi et al., 2020; Chesbrough, 2003) particularly in SMEs (Gassman et al., 2010). The open innovation model should be seen as a strategic imperative to overcome obstacles related to innovation processes.

It exist different research on the influence of OI on performance (Federico and Biancardi, 2020). Despite the relevance of this relationship, several framework and empirical research reveal some controversial results (Moretti and Biancardi, 2018). Sometimes this relationship is positive (Nitzsche, 2016) sometimes is negative and non-linear. To overcome this problem, research argue for the integration of contextual factors which can be studied with OI.

Corresponding Author: Chiraz Ben Salem Ben Gaied

Address: Lab. ISEFE, Management Department, Faculty of Economics and Management of Tunis
FSEGT, University of Tunis El Manar, Tunisia.

Based on literature review and according to Kherrazi and Said (2020), the dynamic of innovation promotes the coherence of strategic and management modes. In addition, it appears that since the work of Schumpeter (1934), researchers have explored the relationship between innovation and entrepreneurship (Al Quadah, 2018) as well as innovation and entrepreneurial orientation (Majdouline et al., 2020). However as pointed out by West et al., (2014) the relationship between OI and the disciplines of management and entrepreneurship such as EO is not sufficiently studied. In particular, few studies have examined the combined interaction between EO and OI. So, this insufficiency prompts us to study this relationship in the Tunisian context with the aim of a better explanation of performance levels. In this sense, Covin and Slevin (1989) argued that EO is an essential strategic orientation that encourages companies to innovate by partnering with external collaborators. In the same vein, Yun (2015) cited in Yun et al., (2016) affirm that 'SMEs and start-ups that are led by entrepreneurship orientation and open innovation paradigm are important driving forces of economic development'.

Thus, Entrepreneurial Orientation is considered as the organisational context within which innovation can take place (Luu and Ngo, 2019) in order to ensure the effectiveness of open innovation activities.

Several studies have been carried out to identify the drivers of OI or to explain its effects on performance. But, those research deal with linear and direct relationships between individual factors. The results are therefore incomplete and don't reflect the total reality of a complex and multidimensional phenomenon like performance. Nevertheless, we will not study the only impact of OI but a simultaneous impact of OI and EO on performance. This choice is in relation with research which call for the evaluation of performance through the combined influence of EO and OI (Luu and Ngo, 2019; Yun et al., 2016). Elsewhere, Kollmann et al., (2021) reveal from their empirical results the existence of different combination of EO and types of cooperation partners.

Mobilizing the theoretical framework of strategic management, organisational entrepreneurship (Lumpkin and Dess, 1996; Covin and Slevin, 1989), OI literature and alignment as "gestalt" (Venkatraman, 1989), this research aimed to give better explanation of how the combined interaction of OI and EO affect performance. Hence, the necessary contribution of a holistic approach such as configurational approach (Heredia et al., 2019; Majdouline et al., 2020; Wiklund and Shepherd, 2005) which suggests that explanation of performance is achieved through configurations combining EO and OI (Yun et al., 2016). In addition to these theoretical motivations, our choice for this subject is supported by considerations that relate to the Tunisian context. We cite the considerable effort devoted in recent years by the Tunisian Government to encourage innovation (Ben Miled-M'rabet, 2012) and to put in place the mechanisms necessary to establish a culture of innovation in Tunisian companies. The empirical exploration of this article is therefore based on the study of industrial Tunisian SMEs with the objective of providing a better explanation of their performance by the constitution of an empirical taxonomy identified by a combined interaction of EO and OI.

In light of alignment as gestalt, we provide some insights on the impact of alignment of OI and EO on performance. We therefore ask the following research question: To what extent does the alignment as 'gestalt' of OI and EO has an impact on performance? In response to this question, we make four parts. The first one is devoted to the conceptual framework. The relationship between OI, EO and performance involving the configurational approach is presented in the second part. Then, we present the methodological choices and the questionnaire survey in the third part. Finally, the fourth part is devoted to the discussion of results, conclusion and further research.

Conceptual Framework

Open Innovation (OI)

In an environment marked by economic change and the advent of digital, innovation has become source of competitive advantage. According to Lopes et al., (2017), companies and especially SMEs have been engaged in innovation by investing in internal R&D and protecting their intellectual property. They therefore adopted a 'closed innovation' model that required strict control of internal knowledge to prevent their flight out of the company. Nevertheless, to guarantee the continuity of innovation, some SMEs can no longer rely solely on their internal resources or R&D. Indeed, as admitted by Ibarra et al., (2020), SMEs are constrained to continually generate financial resources. In terms of literature, Chesbrough (2003) proposes the adoption of OI as an appropriate solution for these challenges.

According to Martinez et al., (2014) 'open innovation supports the creation of competitive advantage that can generated profit through investment of innovative design that performance in terms of survival can be maintained'.

Thus, Chesbrough (2003) defines open innovation as ‘the respective use of intentional knowledge inputs and outputs to accelerate internal innovation and expand markets for the external use of innovation’.

According to Jinhyo et al., (2020) open innovation encompasses the opportunity to leverage external sources of knowledge to thrive the internal innovation and the use of external channels to reach the internal knowledge market. In the literature, we find the 'Inside-out', 'Outside-In' and 'coupled-process' models. We interest in our research to inbound and outbound OI.

Inbound Innovation

It consists in renewing the company’s stock of knowledge by integrating the knowledge from external agents (customers, suppliers, universities, associations, business network).

According to Chesbrough and Crowther (2006), companies generally follow this path to maximize their profitability, to make the R&D function internally flexible to improve innovation capacity and to open up to the international market.

The theoretical framework of Laursen and Salter (2006) dealing with the 'breadth' and 'depth' concepts of OI is the basis of several research.

Breadth is defined as ‘the number of external sources of knowledge used by the firm in its innovation process’. It reflects the number of partners with which a company collaborates Lazzarotti and Manzini, (2009).

Depth refers to ‘the intensity with which the firm draws knowledge from these external sources (Laursen and Salter, 2006). It reflects the phase’s variety.

According to Laursen and Salter (2006), these two concepts of inbound OI represent the openness of firms’ external search processes.

In the present research, we mobilize the theoretical framework of Laursen and Salter, (2006) to study inbound innovation.

Outbound Innovation

It consists in capturing technology, ideas and innovations and commercializing them through external distribution channels. According to Gassman et al., (2010) it is ‘a process that refers to the realization of profits, commercializing ideas, selling intellectual property and multiplying technology while transferring ideas to the outer environment’.

Entrepreneurial Orientation (EO)

EO has been one of the key concepts of entrepreneurship studies that foster competitiveness (Alarcon, 2020; Covin and Wales, 2019) and has received substantial conceptual and empirical attention (Campos et al., 2012).

At the company level, EO manifests itself through its philosophy, decision-making practices and strategic behaviours (Wales, 2016).

In the present research, we consider EO as a multidimensional construct (Lumpkin and Dess, 1996) made up of three independent dimensions which are innovativeness, proactivity and risk taking.

Innovativeness

It is defined by Lumpkin and Dess (1996), as the tendency to engage and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes.

Proactivity

Proactivity is the ability to beat competitors and being the first on the market to introduce new products and services or new technologies (Zahra and Covin, 1995). It is the ability to anticipate and react to the external environment change and the future events (Covin and Wales, 2019).

Risk-Taking

According to Miller and Friesen (1978), risk taking means ‘the degree to which managers are willing to make large and risky resource commitments - i.e., those which have a reasonable chance of costly failures’.

Conceptual model and development of research hypotheses

Many researchers were interested to the relationship between OI, EO and performance such as Yun (2016), and Ibarra et al., (2020). Also, Parkman et al., (2012) have studied the EO' mediating role for the relationship between OI and performance. In addition, Cheng and Huizingh (2014) investigated the impact of different strategic orientations on OI and they found empirical evidence of the dependence of OI to the context and particularly found that EO is the most interacted with OI. We refer also to research conclusion of Yun et al., (2016) 'that the strength of the positive effect of open innovation depends on entrepreneurship orientation and its essential roles on improving innovation performance'.

So, having an entrepreneurial strategic orientation promotes the effectiveness of open innovation and together foster performance. We cite the study of Kollmann et al., (2021) who reveal the existence of different combinations of EO dimensions and types of cooperation partners. They have mobilized the configurational approach, including the application of 'fuzzy-set qualitative comparative analysis (fsQCA)' to identify combinations that influence innovation. Also, Bigliardi et al., (2020) confirm that the relationship of business model innovation and performance is not linear. Likewise, the study of Su et al., (2020) is done with fsQCA of configurational framework.

Thus, we formulate the following research hypothesis:

H1: The alignment as 'gestalt' of Open Innovation and Entrepreneurial Orientation has an impact on performance.

In the literature review, researchers affirm that the configurational approach integrates the principle of equifinality which assumes the existence of several configurations that can be efficient (Drazin and Van de Ven, 1985; Doty et al., 1993). For our research, this principle implies the existence of multiple combinations of variables which are the dimensions of EO and OI that can perform well. In light of the above, we state the second hypothesis:

H2: It exist one or many gestalts that achieve high levels of performance.

Methodological Framework

We present successively the methodological framework chosen for the present research, the measure of variables and the data collection.

Methodological Choice

The configurational approach highlights the existence of possible combinations between a set of mutually theoretical variables. In the present research, we choose the empirical taxonomic approach based on the quantitative method to generate different configurations. Indeed, in order to establish taxonomy of industrial Tunisian SMEs, we pursue a quantitative approach of collecting and analysing empirical data. Thus, we proceed in two stages. The first one is descriptive and consists in generating an empirical taxonomy through cluster analysis method. Thus, Jolibert and Jourdan (2006) recommended this method to operationalizing alignment as 'gestalt' and to ensure internal coherence.

The second stage is explanatory and consists in testing research hypotheses. This involves assessing the predictive validity of the generated taxonomy. So, we carry out variance analysis in terms of performance. After the validity of the taxonomy, we carry out post-hoc tests of multiple comparisons of means, particularly the *Scheffe* test to identify the performing configuration(s).

Operationalization of variables

EO measurement

We opt for measurement scale of Hughes and Morgan (2007), which takes into account the multi-dimensional criterion of EO. Taken separately, Innovativeness, proactivity and risk-taking are measured each one with 3 items. Respondents are required to indicate their level of agreement or disagreement with each of these three variables over the past three years. The answers are ordered according to Likert's five-point scale ranging from 1: totally disagree to 5: totally agree.

Open Innovation measurement

To measure inbound OI, we ask questions about breadth OI and depth OI proposed by Laursen and Salter (2006). The breadth consists of the number of external sources of information used by the firm.

The depth measurement of Laursen and Salter (2016) is expressed in terms of the intensity of use of sources of information or knowledge that lie outside the boundaries of the company. The depth OI and the breadth were constructed using the same 16 sources of knowledge. As part of the study, respondents were asked to rate the

degree of use (partner variety) and importance (phase variety) of the 16 external sources in the development or improving their products or manufacturing processes. The variables are measured on a 5-point Likert scale ranging from 1: Not at all used to 5: Extremely used.

Outbound OI was measured with 4 items on a five-point Likert scale ranging from totally disagree to totally agree which is derived from the work of Cheng and Huizingh (2014).

Performance measurement

We have used subjective measures which are based on managers' perceptions. These measures are proven to be reliable and generate consistent results compared to objective performance measures that are generally difficult to access. Through the measurement scale of Arend (2003), firm's performance is measured by indicators such as sales growth, market share growth and profitability. The respondents are asked to assess the evolution of these indicators in comparison with those of competitors over the three past years. This is on a five-point Likert scale of measurement, ranging from 1: Strongly decrease to 5: Strongly increase.

Using the SPSS 21 software, we have purified the measurement scales for the different variables through validity tests by principal component analyse (PCA) which we have supplemented with reliability analyses (Cronbach's alpha).

Sample and data collection

We conducted our survey using a questionnaire administrated face to face to managers of Tunisian industrial SMEs located in Great Tunisia.

The statistical processing of the field survey data through SPSS 21 shows that our sample is made up of small companies at 70 per cent and medium-sized companies at 30 per cent.

Results and Discussion

We present below the result of taxonomic structure and the result of hypotheses tests.

Taxonomic Structure

As recommended by Venkatraman (1989), the appropriate method to generate taxonomy is 'cluster analysis' which consists of grouping SMEs into configurations. So, the companies belonging to the same cluster tend to be internally similar and the most different from other. To test the taxonomy' statistical validity and reliable results, a hierarchical classification followed by non-hierarchical classification was performed using SPSS 21.

The hierarchical classification was carried out according to the method of Ward (1963), which is an agglomerative algorithm that performs a series of mergers between observations. This method which maximizes the homogeneity of the groups is most commonly used to ensure a better assessment of the level of similarities or differences between the observations. The results obtained are interpreted from the dendrogram which is a schematic visualization of data structure. This classification was completed by a non-hierarchical classification based on the "K-means" method which consists in fixing a posteriori the optimal number of configurations.

The dendrogram and non-hierarchical classification provides a breakdown of the empirical observations into four configurations. In addition, we performed on SPSS 21 an analysis of variance in order to test the statistical validity of the empirically obtained taxonomy. In addition, as affirmed by Jolibert and Jourdan (2006), we carried out the quality assessment of taxonomy using the variance analysis of the classification variables (EO' dimensions, depth OI, breadth OI and outbound OI).

Table 1: One-way ANOVA of classification variables

Classification variables		Sum of squares	Ddl	Average of Squares	F	Signification
Innovativeness	Inter-class	23,153	4	10,576	30,250	,000
	Intra-class	47,786	103	,533		
	Total	70,939	107			
Proactivity	Inter-class	10,091	4	5,006	20,991	,000
	Intra-class	64,421	103	,323		
	Total	74,512	107			
Risk taking	Inter-class	55,327	4	23,729	60,911	,000
	Intra-class	28,137	103	,342		
	Total	83,464	107			
Outbound innovation	Inter-class	10,151	4	6,075	19,111	,000
	Intra-class	60,400	103	,547		
	Total	70,551	107			
Depth	Inter-class	15,479	4	13,244	28,694	,000
	Intra-class	55,155	103	,515		
	Total	70,634	107			
Breadth	Inter-class	16,588	4	14,855	30,225	,000
	Intra-class	60,235	103	,630		
	Total		107			

The results of the variance analysis (see Table 1) show significant discrimination among the 110 industrial Tunisian SMEs (significance level, $p < .05$).

The result of the hierarchical analysis shows an optimal number of four SME configurations resulting in a balanced distribution of observations: {configuration 1: $n = 16$ }, {configuration 2: $n = 22$ }, {configuration 3: $n = 34$ }, {configuration 4: $n = 38$ }. The non-hierarchical classification was then carried out using the K-Means method using information from the hierarchical analysis (number and composition of groups).

From this analysis, we label configurations as following:

Configuration 1 (C1): The Conservative Enclosed (14.56% thus 16 SMEs)

Configuration 2 (C2): The Exceptional Committed (20% thus 22 SMEs)

Configuration 3 (C3): The Vigilant Receptive (30.9% thus 34 SMEs)

Configuration 4 (C4): The Innovative Involved (34.54% thus 38 SMEs).

We note that the number of SMEs in each configuration is greater than the statistical threshold of 10%. This justifies the validity of the obtained taxonomy.

Description of The taxonomy of industrial Tunisian SMEs

We present bellow a description of the empirical configurations generated from Tunisian SMEs.

Table 2: Interpretation of medians and third percentiles of classification variables

Classification Variables	Configuration 1 The Conservative Enclosed	Configuration 2 The Exceptional Committed	Configuration 3 The Vigilant Receptive	Configuration 4 The Innovative Involved
Innovativeness	Average	High	Average	High
Proactivity	Low	Average	High	High
Risk taking	Low	High	Average	Average
Breadth	Low	High	High	Average
Depth	Low	High	Low	High
Outbound innovation	Low	High	Low	Average

We can interpret the profiles of each configuration presented in table 2 as following:

Configuration 1: The Conservative Enclosed

This configuration is the least representative with 16 SMEs. They are characterised by an average orientation of innovativeness and low level of proactivity and risk-taking. Innovations are minor and they are usually in the form of process-related improvements or imitations in product design. These SMEs are followers and passive without any orientation to be the first in the market. They express a little willingness to detect opportunities without being translated into real innovations. They are risk averse. These SMEs are similar to the model of conservative firms and they don't express any orientation towards open innovation. This is clear with low level of breadth, depth and outbound innovation. This profile is similar to the 'closed innovation' model.

Configuration 2: The Exceptional Committed

Their entire innovation process is open to several different partners and they are engaged in deep relationship with external collaborators. They try to find a potential market through different channels to better drain and improve the fluidity of their under-exploited innovation (Cheng and Huizingh, 2014). Their commitment in inbound innovation allows them to take advantage of the richness of this external contribution through deep collaboration with multiple partners. Indeed, companies with an entrepreneurial orientation can better manage risk-taking by partnering with third parties. They accept high risks in terms of acquiring new knowledge that may be different from their basic knowledge and technologies. In addition, these companies engage in risk-taking to ensure an adequate supply of their products and services in potential new markets (Wales, 2016). They are also engaged in outbound OI with an average level. In this way, these entrepreneurial SMEs with high levels of innovativeness can benefit more from permeability of their borders to succeed in setting up activities of exploration of innovations and exploitation of technologies. Companies of this configuration are therefore ambidextrous and similar to conclusion of Nobakht et al., (2021) about the importance of organisation ambidexterity that is conducive to simultaneous pursuit of exploitation and exploration activities.

Configuration 3: The Vigilant Receptive

The companies of this configuration are committed to open innovation. But they are vigilant towards the development of new products. They are distinguished by their proactive capacity which translates into a systematic search for opportunities and new markets. These companies are ready for all types of collaboration across a wide range of partners (high level of breadth). These SMEs don't make a preliminary selection and aren't engaged in deep relationships (low level of depth). So, it seems that the ambition of this collaboration is to save time in the market. This is why they try to explore the knowledge and technologies that are already provided by other companies. The result we have obtained is therefore consistent with the idea of Wales et al., (2013) who believe that companies with a strong proactivity are more open to external collaboration because they are constantly striving to be the first in the

market. However, outbound innovation is almost absent in these companies that can be justified by their average attitude towards risk-taking. These SMEs therefore behave within a degree of vigilance.

We conclude a better fit between the high level of inbound OI and average level of risk taking. We rely on conclusion of Schroll and Mild (2011), who affirm that inbound OI do not include a great risk taking in contrast to outbound OI.

Configuration 4: The Innovative Involved

SMEs of this configuration have high level of innovativeness and proactivity that leads to better monitoring the external environment in order to seize opportunities and respond in time to the future needs of customers. Therefore, these companies are able to identify external knowledge and select the appropriate partners with their internal needs and thus achieve bring added value in terms of strengthening their current capacities and exploring research and development.

The SMEs of this configuration are distinguished by high level of openness to inbound innovation particularly with an implication and commitment in deep relationship and make selection of partners. Their orientation towards inbound innovation is similar to that proposed by Lazzarotti and Manzini (2009), named ‘integrated collaborators’.

In addition, this configuration is characterised by an average commitment to outbound innovation in the form of outsourcing of certain activities. Risk-taking behaviour among these SMEs is moderate because firms oriented towards outbound innovation should be more attentive. We cite also the conclusions of Carvalho and Sugano (2016), who stated that outbound innovation activities could be more risky and that the company may not capture the added-values from commercializing its innovation. For this reason, SMEs of this configuration refuse a total engagement in outbound innovation and show a certain precaution.

Testing the Impact of alignment as ‘Gestalt’ on performance

We verify from this test the effect of OI-EO’s alignment on performance.

Table 3: Analysis of variance of the impact of configurations on performance

	Sum of squares	Ddl	Average square	F	Signification
Inter-class	6,144	4	4,177	7,981	,001
Intra-class	58,210	103	,523		
Total	64,354	107			

Based on table 3, there is a statistically significant impact of alignment as ‘gestalt’ on performance ($p < 0.05$). There is therefore rejection of H_0 of the equal means and the confirmation of the first hypothesis.

Test of the second hypothesis of the existence of one or many preferable gestalts

As recommended by Jolibert and Jourdan (2006), the confirmation of the existence of an effect of alignment as ‘gestalt’ requires to be supplemented by post-hoc tests. The test of multiple comparisons of means of *Scheffe* determines the means which differ from each other.

At a significance level ($p < .05$), the results of *scheffe*’s test show a significant difference between configurations. This test identifies the best performing configuration (s). We note that ‘Innovative Involved’ (C4) and ‘Exceptional Committed’ (C2) are significantly different and achieving the same highest levels of performance.

We also calculated the average scores for the business performance variable and interpreted it through three levels: low, medium and high. The results of the interpretations are given in the table 4.

Table 4: Average scores of performance

Variable	Configurations	N	Average score	Interpretation
Performance	1	16	2.156	Low
	2	22	3.883	High
	3	34	2.934	Average
	4	38	3.952	High

The interpretation of the performance's means score shows that the 'Committed Exceptional' (C2) and the 'Innovative Involved' (C4) are the most efficient. We note therefore, that with these two different profiles, it is possible to achieve the same result of a high level of performance. Also, our results reveal that the 'Conservative Enclosed' (C1) has the lowest level of performance and finally, the 'Vigilant Receptive' (C3) recorded an average level of performance.

Conclusion

The alignment as gestalt is validated by an empirical taxonomy of the characteristics of Industrial Tunisian SMEs which distinguishes four configurations that are associable with different levels of performance. This taxonomy provides a general view.

We have tested the predictive capacity of this taxonomy on performance. We found that 'Exceptional Committed' (C2) and 'Innovative Involved' (C4) have different profiles in terms of EO and OI and achieve the same high level of performance. This result is consistent with the principle of equifinality as developed by Drazin and Van De Ven (1985) and Doty et al., (1993) which is specific to the configurational approach.

Our results can also be discussed with regard on the profile of each configuration. We admit the existence of three configuration clans.

The first clan represents 54.54% which contains the 'Exceptional Committed' (C2) and the 'Innovative Involved' (C4) configurations. It is the performing clan which is characterized by an entrepreneurial orientation attitude and commitment towards the OI model. In this sense, we are in line with the conclusion of Ibarra et al., (2020) who argue in favour the adoption of EO and OI as dynamic capabilities useful in times of crisis. Industrial Tunisian SMEs should also be increasingly involved in the adoption of these two strategies, particularly in an environment marked by health and economic crisis.

We find a second clan that represents 14.56% of our sample and includes the 'Conservative Enclosed' (C1) which is marked by conservative attitude and an orientation towards the closed innovation model. It achieves the least level of performance. So, this can be explained by the mentality of these companies characterised by a desire to protect their ideas and innovations, or even because OI is a new strategy for them and they need more time to become familiar with it and to be able to apply it and to copy with other performing configurations (C2 and C4).

The third clan represents 30.9% and contains 'the Vigilant Receptive' (C3) which is characterised by an average level of proactivity and innovativeness with an adoption of the OI model oriented more towards large network of partners with moderately deep engagement with them.

Contributions

The conclusion that can be drawn from the present research revolves around some theoretical and managerial contributions. From a theoretical point of view, the result of this research revealed the importance of the alignment perspective as a 'gestalt' integrated into the configurational approach. This holistic approach allowed us to identify combinations between EO and OI and thus go beyond linear and binary relationships. This enabled us to generate a taxonomy which contains four configurations of industrial Tunisian SMEs. This ensures a better explanation of the different levels of performance achieved by these SMEs.

Thus, we respond to the call of Wiengarten et al., (2013) cited in Majdouline et al., (2020) to conduct future research on the integration of EO and OI. This is because entrepreneurship and innovation are considered as two complex concepts that require more elucidation and empirical research to establish conceptual models and explanatory theories. Still at the theoretical level, we learned that the specificity of the configurational approach is that there is no single way to succeed and perform but it may exist more than one way to be performing. It is the specificity of equifinality principle.

On the managerial level, the taxonomy generated by our work is a concrete tool stemming from the Tunisian SMEs reality that could help companies that plan to engage in the strategy of open innovation.

Based on this research, industrial Tunisian SMEs could align themselves with the efficient configuration that suits them to meet the performance challenge. Indeed, this study calls on the managers of Tunisian industrial companies to encourage them to pay more attention to the appropriate conditions for a better implementation of open

innovation. By this contribution, the taxonomy formulated could therefore ultimately help SMEs in their strategic entrepreneurial positioning by making them aware of the adoption of OI and its implementation by facilitating their task and allowing them to save time.

Limitations and further research

This research work cannot escape some limits which can obviously become future perspectives of research. Thus, the data collected are specific to the industrial Tunisian PME's, which may limit the generalisation of the results to other sectors of activity. So, it would be appropriate to look at other areas of activity. In the same vein, our taxonomy depends on the context in which the study is carried out. Nevertheless, the configurations of Industrial Tunisian SMEs are subject to comparison with other configurations. Thus, researchers and practitioners in any country can compare their configurations to those generated in this research. Thus, the specific characteristics of Tunisian SMEs and the conclusion that emerge are likely to be added and enriched the existing literature of EO and OI. So, it is interesting to carry out future research to be able to judge the possibility of applying our taxonomy generated to other countries.

Furthermore, the mobilization of cluster analysis is characterized by a certain stability of the configurations that seems to have a static character and so, can reduce the understanding of their evolutionary trajectories. To design a dynamic taxonomy, it would be advisable to carry out research based on a longitudinal analysis in order to know their future trend. The continuation of this research could be considered by mobilizing a combined data analysis method. So, with the alignment as 'gestalt', research can also be continued by adopting the alignment perspective as 'co-variation' through the mobilization of the Structural Equation Modelling.

References

1. Al Quadah, M-A. (2018): The Impact of Entrepreneurship Initiatives in Enhancing Creativity and Innovation. *International Journal of Business and Management*, 13(3):1-12.
2. Alarcon, J.R., Requena, G.P., Ortega, M.J.R. (2020): Cognitive social capital and absorptive capacity as antecedents of entrepreneurial orientation: A configurational approach. *Eurasian Business Review*, 10: 493-517.
3. Arend, R. J.(2006): SME supplier alliance activity in manufacturing: Contingent benefits and perceptions. *Strategic Management Journal*, 27 : 741-763.
4. Bigliardi, B., Ferraro, G., Filippelli, S., Francesco Galati, F. (2020): The influence of open innovation on firm performance. *International Journal of Engineering Business Management*, 12 : 1-14.
5. Ben Miled-M'rabet, N. (2012): Le Système national d'innovation en Tunisie. *Le courrier de l'industrie*, 119.
6. Campos, M.H., Nuno, J.P., Parellada, F.S. (2012): The Entrepreneurial Orientation-Dominant Logic-Performance. *Brazilian Administration Review*, 9(4) : 60-77.
7. Carvalho, G., Sugano, J- Y. (2016) : Entrepreneurial orientation as driver for open innovation, Caracas, 37(5).
8. Chesbrough H. (2003): Open innovation: the new imperative for creating and profiling from technology, Harvard Business Press, Boston.
9. Chesbrough, H., Crowther, A. K. (2006) : Beyond high tech: Early adopters of open innovation in other industries. *R&D Management*, 36(3) : 229-236
10. Cheng, C. J. and Huizingh, E. K. (2014): When is open innovation beneficial? The role of strategic orientation. *Journal of Product Innovation Management*, 6 : 1235-1253.
11. Covin, J. G., and Wales, W.J. (2019) : Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice*, 43(1) : 3-18.
12. Covin, J.G., and Slevin, D.P. (1989) : Strategic Management of Small Firms in Hostile and Benign environments. *Strategic Management Journal*, 10(1) : 75-87.
13. Doty, Glick, W.H. and Huber, G.P. (1993) : Fit, Equifinality and Organizational effectiveness: A test of two Configurational Theories. *Academy of Management Journal*, 36(6) : 1196-1250.
14. Drazin R. and Van De Ven, A.H. (1985) : An examination of the alternative forms of contingency theory. *Administrative Science Quarterly*, 30: 514-539.
15. Federico M. and Biancardi, D. (2020) : Inbound open innovation and firm performance. *Journal of Innovation & Knowledge*, 5 : 1-19.
16. Garcia-Martinez, M., Zouaghi, F., Sanchez Garcia, M. (2017) : Capturing value from alliance portfolio diversity: The mediating role of R&D human capital in high and low tech industries. *Technovation*, 59, 55-67
17. Gassman, O., Enkel, E., Chesbrough, H. (2010) : The future of open innovation. *R&D Management*, 40(3) : 213-221.

18. Heredia, J., Flores, A., Heredia, W., Arango, R., Medina, L. (2019) : How Innovation Influences on Export Performance: A Configuration Approach for Emerging Economies, *Journal of Technology Management & Innovation*, 14(4) : 54-65.
19. Hughes, M. and Morgan, R. E. (2007) : Deconstructing the relationship between entrepreneurial orientation and business performance at the embryonic stage of firm growth, *Industrial Marketing Management*, 36(5) : 651-661.
20. Ibarra, D., Bigdeli, A.-Z., Igartua, I., Ganzarain, J. (2020) : Business Model Innovation in Established SMEs: A Configurational Approach, *Journal of Open Innovation : Technology Market and Complexity*, 6(3) : 1-22.
21. Jinhyo, J.-Y., Xiaofei, Z., Kwangho, J., Tan, Y. (2020): The Culture for Open Innovation Dynamics, *Sustainability*, 1-22.
22. Jolibert, A., and Jourdan, P. (2006), *Marketing Research: Méthodes de recherche et d'études en marketing*, Dunod, Paris.
23. Kherrazi, S., and Said, K. (2020): Stratégie et management de l'innovation collaborative: exploration du contexte européen', *Innovations*, 62(2): 17- 44.
24. Kollmann T., Stöckmann, C., Niemand, T., Hensellek, S., Cruppe, K. (2021) : A configurational approach to entrepreneurial orientation and cooperation explaining product/service innovation in digital vs. non-digital startups, *Journal of Business Research*.
25. Laursen, K., and Salter, A. (2006): Open for innovation: The role of openness in explaining innovation performance among UK manufacturing firms. *Strategic Management Journal*, 27(2) : 131-150.
26. Lazzarotti, V., and Manzini, R. (2009): Different modes of open innovation: A theoretical framework and an empirical study. *International journal of innovation management*, 13(4) : 615-636.
27. Lopes, C. M., Scavarda, A., Hofmeister, L. F., Thome, A. M. T., Vaccaro, G. L. R. (2017) : An analysis of the interplay between organizational sustainability, knowledge management, and open innovation. *Journal of Cleaner Production*, 142: 476-488.
28. Lumpkin, G.T., and Dess, G.G. (1996) : Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of management review*, 135-172.
29. Luu, N., and Ngo, V. (2019) : Entrepreneurial orientation and social ties in transitional economies. *Long Range Planning*, 52(1) : 103-116
30. Majdouline, I., El Baz, J., Jebli, F. (2020) : Entrepreneurship orientation and innovation linkage: The case of Moroccan firms. *Projectics*, 25(1) : 27-45.
31. Martinez, S., Garcia, F.J.D., Moreno, G. (2014): Environmental Orientation as a Determinant of Innovation Performance in Young SME. *International Journal Environment Resources*, 8(3): 635-642.
32. Miller, D. (1996): Configurations Revisited. *Strategic Management Journal*, 17(7): 505-512.
33. Moretti, F., and Biancardi, D. (2018): Inbound open innovation and firm performance. *Journal of Innovation & Knowledge*, 1-19.
34. Nitzsche, P., Wirtz, B. W., Goettel, V. (2016) : Innovation success in the context of inbound open innovation. *International Journal of Innovation Management*, 20(2).
35. Nobakht, M., Reza Hejazi, S., Akbari, M., Sakhdari, K. (2021): Exploring the relationship between open innovation and organisational ambidexterity: the moderating effect of entrepreneurial orientation. *Innovation, Organization & Management*, 23(1).
36. Parkman, I., Samuel S., Holloway, S., Sebastiao, H. (2012): Creative industries: aligning entrepreneurial orientation and innovation capacity. *Journal of Research in Marketing and Entrepreneurship*, 14(1): 1-39.
37. Schumpeter, J.A. (1934) : The theory of economic development. *Public Opinion Quarterly*, 58 : 358-480.
38. Schroll, A. and Mild, A. (2011) : Open innovation modes and the role of internal R&D: an empirical study on open innovation adoption in Europe. *European Journal of Innovation Management*, 14(4) : 475-495.
39. Su, J., Zhang, S., Ma, H. (2020) : Entrepreneurial orientation, environmental characteristics, and business model innovation: A configurational approach. *Journal Innovation Organization & Management*, 22(4) : 399-421.
40. Venkatraman, N. (1989) : The concept of fit in strategy research: toward verbal and statistical correspondence. *Academy of Management Review*, 14(3) : 423- 444.
41. Wales, W.J., Gupta, V.K., Mousa, F-T. (2013) : Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal*, 31(4) : 357-383.
42. Ward, J. H. (1963) : Hierarchical grouping to optimize an objective function. *Journal of American Statistical Association*, 58(301) : 236-244.
43. West, J., Salter, A., Vanhaverbeke, W., Chesbrough, H. (2014) : Open innovation: The next decade. *Research Policy*, 43(5): 805-811.

44. Wiengarten, F., Fynes, B., Cheng, E. and Chavez, R. (2013) : Taking an innovative approach to quality practices: exploring the importance of a company's innovativeness on the success of TQM practices. *International Journal of Production Research*, 51(10) :3055-3074.
45. Wiklund, J., and Shepherd, D. (2005) : Entrepreneurial orientation and small business performance: A configurational approach. *Journal of Business Venturing*, 20 : 71-91.
46. Yun, J-J., Park, K., Kim, J., Yang, J. (2016) : Open Innovation Effort, Entrepreneurship Orientation and their Synergies onto Innovation Performance in SMEs of Korea. *Science, Technology & Society*, 21(3) : 1-25.
47. Yun, J. H. J. (2015) : How do we conquer the growth limits of capitalism? Schumpeterian dynamics of open innovation. *Journal of Open Innovation: Technology, Market and Complexity*, 1(17) : 1-20.
48. Zahra, S.A., Covin, J.G. (1995) : Contextual influences on the corporate entrepreneurship performance relationship: a longitudinal analysis. *Journal of Business Venturing*, 10(1): 43-58.