RESEARCH ARTICLE

Awareness of strategy execution barriers in decision-making process: moderated mediation analysis

Joanna Radomska · Cyprian Kozyra

Published online: 16 March 2020
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Abstract Although many studies have discussed the strategy execution process and the reasons for its ineffectiveness, there is a need to consider the relations and interactions between the factors that hinder strategy implementation. The purpose of this article is to explore the interrelations between the strategy execution barriers by considering six factors and understanding the influence of these factors on a company's performance measured by its achievement of strategic goals (as one of the strategy execution measures) and its revenue dynamics (as a financial measure). In order to achieve the research goal, structural equation modelling was performed for the path analysis. The research sample, which consisted of 150 companies of different sizes and from different industries, was selected from the population of companies registered on the Warsaw Stock Exchange. The initial model of relationships was modified to create the final model from which insignificant paths had been removed. Our main finding is that the strategy implementation process should be perceived as a set of integrated factors, which should be analysed

from an aggregated perspective in decision-making process. We believe that, rather than focusing only on the efficiency of final results, attention should be paid to ensure the effectiveness of all the factors aggregated in one construct and hence that it is necessary to regard the implementation process as an execution-as-learning concept. As revealed by our study, the awareness of strategy execution barriers directly impacts the achievement of strategic goals and indirectly impacts the revenue dynamics.

Keywords Strategy execution · Decision-making process · Strategy implementation barriers · Awareness

Introduction

As reported by recent studies, executing strategy seems to be more important than the strategy itself (Balarezo and Nielsen 2017); at the same time, execution of strategy is more difficult than its formulation (El-Masri et al. 2015). This is mainly because execution is more complicated and time-consuming (Bell et al. 2010). Despite this, managers invest less time, energy and resources in the execution process (Bolboli and Reiche 2013). In the literature, we may observe a distinction between the scope of strategy execution and implementation. Such approach is

J. Radomska (✉)
Department of Strategic Management, Wrocław
University of Economics, Wrocław, Poland
e-mail: joanna.radomska@ue.wroc.pl

C. Kozyra
Department of Statistics, Wrocław University of
Economics, Wrocław, Poland
e-mail: cyprian.kozyra@ue.wroc.pl

based on the perspective presented by Favaro (2015), where strategy execution is aimed at turning implemented strategy into commercial success and is distinguished from strategy implementation, which consists of all the decisions and activities required to turn sets of strategic choices into reality. Therefore, strategy execution has more comprehensive and measurable perspective, which is also confirmed by Bossidy and Charan (2011). As the research in this article investigates the revenue dynamics and strategic goals achievement, the execution perspective was used.

The proportion of formulated strategies that were not executed or that were realized with poor results varies between 50 and 90%, depending on the adopted research method (Sirkin et al. 2005). As Cândido and Santos (2015, p. 259) have suggested, “some of the evidence supporting these figures is outdated, fragmentary, lack scientific rigour or is just absent”, which is an effect of the lack of a research protocol. The same incoherence is indicated by an analysis of the importance of the factors responsible for unsuccessful strategy execution. Many publications have focused on the gap between execution and strategy formulation caused by different factors affecting the failure of both stages (Stadler and Hinterhuber 2005), suggesting that the problem of strategy execution failure remains an important and ongoing issue.

Although the research results reveal many execution barriers (the factors that hinder strategy execution), most of them have a universal character and do not differ according to the type of organization analysed, as similar elements are indicated in companies as well as in public institutions (Al-Khouri 2014). Accordingly, many models, concepts and paradigms have been proposed. Most of them include the same set of convergent factors, sometimes differing in their names or scope. However, as suggested by Duarte and Austin (2016), more attention should be paid to the relations and interactions between the factors hindering strategy execution.

The aim of this article, therefore, is to explore the interrelations between the strategy execution barriers and to understand their influence on performance measured by strategic goals achievement (as one of the strategy execution measures, perceived by managers) and revenue dynamics (a financial measure). These two measures were adopted to ensure the validity of key informant data by using objective performance

data as well as subjective assessment of performance, as recommended by Morgan et al. (2004). To achieve that goal, both a mediation analysis and a moderated mediation analysis were conducted using the structural equation modelling method.

Theoretical background and hypotheses

As reported by various studies, the strategy execution process integrates many intangible factors, including the top management support for actions initiated by lower-level employees (Ranganathan and Dhaliwal 2001), wide and two-way communication (Ariyachandra and Frolick 2008) and effective cooperation between organizational units (Bandara et al. 2005). These factors integrate the existing organizational system with the processes designed for strategy execution; however, such integration requires changes in resources distribution, task delegation and the organizational structure (Sikdar and Payyazhi 2014). These intangible aspects are also important because they shape the interactions between departments (Grover et al. 1999), organizational culture (Willcocks et al. 1997), climate and policy (Boonstra 2006). Therefore, perspectives on strategy execution are built from differentiated but combined elements that cannot be separated. For that reason, the available research results that are based on different research concepts are difficult to compare. Table 1 presents the research concepts that have been used to investigate the factors affecting the strategy execution process.

According to the first research perspective, the analysis should be based on the management functions whereby different problems may be identified. Although there would probably be differences according to the organization size, the listed factors present a coherent concept where various aspects of the organization are analysed. In the second approach, the listed elements are independent variables, and, although some intra-organizational relationships are considered, there are still no recommendations regarding the relations between them. In the case of hard-to-measure factors, it is also important to consider the coordination and power delegation (Galbraith and Kazanjian 1986) or the interest groups and the conflicts involved (Reed and Buckley 1988). Therefore, the institutional context is emphasized (Jiang and Carpenter 2013). The third approach includes the

Table 1 Different perspectives on factors affecting strategy execution, with sample references

Research perspective	Management functions		Hard-to-measure factors			Measurable factors	
Factors	Planning; organizing; motivating, control		Organizational structure; organizational culture; leadership; participation; communication; strategic approach			Tools, systems, procedures, processes, resources, measurement	
Author	Alashloo et al. (2005)	Hrebiniak (2005)	Hrebiniak (2005)	7 S (Waterman et al. 1980; Eisenhardt and Martin 2000; Ho et al. 2013)	8S (Higgins 2005; Mankins and Steele 2005)	8S (Higgins 2005; Mankins and Steele 2005)	BSC (Kaplan and Norton 2001)

elements perceived as measurable and important for measuring the strategy execution progress and results achieved.

Although the set of key factors crucial for strategy execution has been identified in Table 1 their mutual interactions and connections have not been investigated thus (Kazmi 2008). Support for such a holistic approach was indicated by Beer and Nohria (2000), who recommended that a top-down approach (with emphasis on modifying structures and systems) should be integrated with a bottom-up approach (focusing on changes in communication and employee participation). It would be important to investigate the reciprocity and interdependence of top-down and bottom-up approaches, as they do not appear separately, but are usually a set of coexisting elements with a cumulative impact. This is the research gap we want to address. Such operational and comprehensive perspective is represented by EFQM concept (Fundamental Concepts of Excellence, 2013), where the six areas were determined—leadership, strategy, employees, resources, processes and measurement system. That concept is treated as an alternative for Balanced Scorecard where the measures are directly focused only on strategy execution measurement (Wongrasamee et al. 2003). Here, the factors that are investigated are of both financial (measurable) and nonfinancial (unmeasurable) nature. As it was designed to increase the effectiveness of decision-making process, we believe that it is worth investigating the structured perspective proposed as a set of key topics important for strategy execution (Martin-Castilla and Rodriguez-Ruiz 2008). That is the perspective that we further develop. Based on the research results presented, we investigated six constructs that were chosen because they are the most commonly analysed and we combined within the

measurable and hard-to-measure perspective. Our constructs were defined as a set of factors that are perceived as execution barriers in a particular area. A detailed definition is provided in Table 2. We have measured their importance (impact) for strategy execution.

Leadership

Leadership is the most often mentioned factor (Law and Ngai 2007), mainly because it determines the cohesion of visions with the actions undertaken (Hammer and Stanton 1995) and influences the level of knowledge about the importance of strategy execution process in the organization (HBR Spotlight 2010). Strategy formulation is the main task listed among the managerial responsibilities (Philipsen and Kemp 2003), which is influenced by the competitive development and personal goals that determine the understanding and use of strategy content (Postma and Zwart 2001). That impact on strategy content is manifested by core contribution to firms' value creation processes (Pugliese et al. 2009) but also defining and shaping the decisions and their exploration in particular contexts as pointed by McNulty and Pettigrew (1999).

This is enhanced especially by adopting a bottom-up approach while formulating the strategy and supporting this process further with a clear communication strategy (Angel 2008). As a result, it is possible to find the bridge between strategy creators and implementers, which is reflected in the hierarchy of the organizational structure (Hamdi and Goethert 1985). However, the proper decision-making mechanism supporting the organizational learning process is required (Mezger and Violani 2011). According to Håkonsson et al. (2012), aspects such as management

Table 2 Definitions of constructs. *Source:* based on Wongrassamee et al. (2003), Hrebiniak (2005), Eisenhardt and Martin (2000), Ho et al. (2013), Higgins (2005) and Mankins and Steele (2005)

Factor	Description
Leadership	Relates to the behaviour and competences of the executive team and other managers aimed at organizing the strategy formulation and execution process
Employees	Relates to the potential and skills useful for improving the strategy execution process
Processes	Relates to the way how organization designs, manages and improves the processes crucial for effective strategy execution
Measures	Relates to the process of examining the results achieved in relation to the planned execution performance
Resources	Relates to managing and utilizing the internal resources effectively in order to carry out effective executive performance
Strategy content	Relates to the values, vision and strategic decisions and their internal coherence, flexibility and easiness to be transformed into detailed objectives

style and the ability to process and analyse the information have an important impact in this case.

On the other hand, the role of leaders includes not only extensive cooperation, but also the evaluation of emerging opportunities to build a competitive advantage and make the right decisions aimed at executing development concepts (Forbes and Milliken 1999). To achieve this, leaders need to adopt a proactive attitude and ensure that they are involved in execution activities (Hanley 2007), and they should also possess the knowledge and information necessary to make effective strategic decisions (Carpenter and Westphal 2010). This requires having a diverse set of skills and abilities (Miller et al. 2008), especially those that support a wide-ranging dialogue aimed at establishing the details of the executed strategy and those that maintain the consistency of the activities carried out (Getz and Lee 2011). One recommendation for increasing the effectiveness of the strategy execution process is to improve the ability to prioritize, which means choosing those initiatives that seem to be the most promising for the organization's development. However, it is important to understand the implications of these initiatives, such as the appropriate allocation of resources (Legge 2014). It also requires being consistent, as the success of a given strategic initiative is rarely the result of a single action. Rather, it is a process that evolves over time and consists of repetitive sequences of events (Garvin 2013).

Many recommendations concern the desired leadership features. However, there are relatively few studies that analyse factors such as education, previous

experience (Zhang and Rajagopalan 2010) or personality (Chin et al. 2013), all of which strongly influence strategic behaviour (Peterson et al. 2009), the strategic choices made and the strategy itself (Chatterjee and Hambrick 2007). Moreover, the manager's personality can strengthen or hinder closer relations with other employees (Herrmann and Nadkarni 2014) and thus affect the climate and work environment by shaping processes, structures or incentive systems (Resick et al. 2009). The gender of the manager should also be considered (Alpha and Sabourin 2012), especially in the risk-taking approach (Gorzeń-Mitka 2015). As emphasized by Prahalad and Bettis (1987), the manager's personal characteristics, regardless of the position in the organizational hierarchy, always influence the cognitive perspective.

While analysing the leadership factor, it is also important to consider the organizational process by focusing on the relationships between the board, managers and mid-level managers, which could be a source of conflicts and tensions in their mutual relations (Kipp and Kipp 2012). The involvement of mid-level managers has already been investigated (Alamsjah 2011), and research results have proved their importance in the strategy execution process that mainly stems from their ability to ensure a combination of operational and strategic issues (Burgelman 1983), but also from their positive impact on the results achieved (Wooldridge and Floyd 1990) and their greater knowledge about the strategy (Collier et al. 2004). However, mid-level managers are strongly driven by their personal interests, so social/

emotional factors should also be considered (Huy 2011). Based on the arguments presented, we may conclude that leadership is the factor that influences all organizational aspects and, therefore, that it may have either supplementary or compensatory effects (O'Reilly et al. 2010). Given these considerations, it is hypothesized that:

H_{1a} Leadership has a positive impact on the strategy content.

H_{1b} Leadership has a positive impact on the employees in strategy execution.

H_{1c} Leadership has a positive impact on the resources in strategy execution.

H_{1d} Leadership has a positive impact on the processes in strategy execution.

H_{1e} Leadership has a positive impact on the measures of strategy execution.

All hypotheses in this paper should be interpreted in accordance with the operational definition of constructs. For example, H_{1a} means “the higher the importance of strategy execution barriers in the leadership area, the higher the importance of strategy execution barriers in strategy content”.

Employees

According to Raps (2005), broadening the responsibility for strategy execution should not be limited only to mid-level managers, but should also include a wider group of employees, as we may identify a link between the level of conscious involvement in strategic initiatives and the higher efficiency of strategy execution (Renckly 2004; Saif et al. 2013; Wart 2010). This involvement considers not only the participation in decision-making processes or strategy formulation, but also the stage of strategy communication and transposition into operational practices (Salas and Huxley 2014). However, this requires employees to have appropriate skills (Huselid and Becker 2011). Therefore, it is recommended to include specific training as part of an organizational performance improvement system (Sørensen and Holman 2014). Such skills are a key element in increasing the efficiency of operating goals (Paillé et al. 2014) and one of the nonfinancial components of the incentive system (Khadem 2008) related to the strategy

execution results (Aksakal and Dagdeviren 2014). As concluded by Maditinos et al. (2014), there is a link between the skills and competences increased by special training and a higher probability of executing the strategy successfully. Sue and Khawaja (2015) further found that those capabilities are necessary at all managerial levels and in all managerial processes. Therefore, H₂ was hypothesized:

H₂ Employees have a positive impact on the processes in strategy execution.

Processes

As mentioned by Yaprak et al. (2011), effective strategy execution requires ensuring the internal match between the strategy itself and the organizational structure and performed processes. Moreover, as outlined by Hanafizadeh and Moayer (2008), defining the strategic processes helps organizations to use their resources based on their objectives. There are several processes that are important for ensuring the proper strategy execution. The one that is mentioned most frequently is the process of communication (Foreman and Argenti 2005), which is aimed at eliminating the barriers between people responsible for executing changes and those who directly face their effects (Terziovski et al. 2003). However, effective execution includes more complex activities than explaining and communicating the strategy in the organization (Lepsinger 2006). According to Driedonks et al. (2014), the effectiveness of the communication process is influenced by its reciprocal character, understood as a combination of bottom-up and top-down approaches. Moreover, it is recommended to consider the mutual impact of horizontal and vertical information flow, which is often based on interpersonal relationships (Thanyawatpornkul et al. 2016). Therefore, it is postulated that a combination of methods, integrating oral, written and visual presentations, should be used (Conrad 1990). However, as observed by Guetzkow (1965), we may identify the communication paradox whereby the employees who receive extensive information from their superiors are the group most often declaring an insufficient level of information. This is confirmed by research results, according to which over 90% of middle-level managers report sufficient frequency of strategy communication, whereas only 55% of them are able to name

one of the strategic priorities of the organization (Sull et al. 2015). Thus, effectiveness of the communication process is highly important.

The process of effective feedback and control is also mentioned in the literature (Okumus 2003), which especially highlights the need to consider not only the direct supervision (Bolboli and Reiche 2013), but also the comprehensiveness of the monitoring system, the regularity of control and the relevance of the measures used (Shah and Sid Nair 2014). To ensure this comprehensiveness, a good information system should be developed first in order to guarantee the unlimited access and update possibility for all employees involved in the execution process (Obeidat et al. 2017).

Another issue investigated by some researchers is the coherence between the organizational structure and strategy execution (Robbin and DeCenzo 2005). For such coherence, the relations between tasks, their delegation and the formal and informal information channels are important (Olsen et al. 1992). Unclear links, division of responsibilities or decision-making process is often caused by an inadequate organizational scheme in which many managers are unable to coordinate the tasks assigned (Heide et al. 2002). Therefore, as found by Brenes et al. (2008), designing an organizational structure according to strategic priorities is one of the key factors affecting the effectiveness of the strategy execution process. For that reason, as reported by Rajasekar (2014), in most of the surveyed enterprises the significant modifications to the organizational structure are executed in an attempt to ensure the structure's consistency with the strategy and strategic goals. Most managers perceive such adaptations as a requirement for ensuring their effectiveness (Olson et al. 2005). However, due to the considerable variation among organizational structures, there is no direct recommendation regarding the organizational structure's design that will ensure a higher degree of effectiveness of operational activities. The priority should be given to diagnosing the degree of the adjustment between the organizational structure and the executed strategy (Miller et al. 2004); based on that analysis, further modifications of processes could be introduced (Pleshko and Nickerson 2008). However, as postulated by Vermuelen et al. (2010), slight changes should be considered in periods both of incremental changes and of relative stability. As recommended by Kohlbacher (2010), it is

necessary to ensure the integration of strategy, organizational structure and coordination of resources in one process, which is reflected in following hypotheses:

H₃ Processes in strategy execution are positively impacted by strategy content as well as resources.

H₆ There is a positive impact of processes in strategy execution on strategic goals achievement.

Measures

The main role of a measurement system is to indicate the degree of strategic goals achievement and to report any execution problems that occur (Markiewicz 2012). The research results show the relation between the usage of execution tools, the improvement of the effectiveness of a strategy execution measurement system and the reduction of employees' resistance to the changes introduced. Therefore, it is recommended to adopt a comprehensive approach that encompasses the relations between the tools, the measures and the measurement system (Radomska 2016).

It is also worth noting that there are financial and non-financial perspectives on strategy execution measurement, and each of these different approaches has advantages and disadvantages. However, Miller (1997) and Okumus (2003) argue that completion, achievement and acceptability of final results are among the three criteria that should be considered; based on these arguments, we may further analyse the degree of strategic goals achievement as one of the measures of strategy execution effectiveness. Therefore, another area worth investigating concerns the link between the execution tools and the measurement of strategy execution progress, especially as there are relatively few models that describe the links between the strategy and its measures (Malmi 2001).

H₄ The importance of strategy content has a positive impact on the importance of measures for strategy execution.

H₅ Processes in strategy execution have a positive impact on the strategy execution measures.

H₇ There is a positive impact of strategy execution measures on strategic goals achievement.

Resources

As mentioned by Nag et al. (2007), neither formulation nor execution of the strategy should be done without considering the resources possessed. The importance of resources availability has been confirmed by many studies. They are the key factor necessary for the execution of each development option, regardless of its expansiveness and character (Lingle and Schiemann 1994). Financial resources are considered to be the most important (Sterling 2003), mainly because of their impact on the quantity and quality of other resources (Anand and Merrifield 1982). Therefore, strategic discipline is required, which results in high consistency during the process of selecting strategic initiatives and avoids the reallocation of resources due to emerging opportunities, since such reallocation may not be coherent with the main strategy and may negatively influence the speed of necessary changes (Kaplan and Norton 2001). However, as Sull et al. (2015) have indicated, the vast majority of managers prefer flexibility over organizational cohesion, which may lead to significant limitations in the strategy execution process. Moreover, as mentioned by Bower (1986), there is a risk associated with delegating decisions about resource allocation, because these decisions impact on the design of final processes and may lead to differences between the intended and executed strategy.

Strategy and performance

As outlined by Barnett and Carroll (1995), the process of introducing change is as important as the content of that change. This was further confirmed by Beer and Eisenstat (2000), who identified unclear strategy and conflicting priorities as critical factors for strategy execution. The concept of development is crucial, because it is relevant to other factors supporting the execution process and impacts on their content (Hrebiniak 2013). This has been confirmed by Brenes et al. (2008), who found that explicit strategy (clear and written) is essential for a successful execution process. As mentioned by Martin (2010), in some cases the strategy itself is the reason for low profitability, even when its execution was efficient, mainly because the line between strategy formulation and execution has not been sharp. However, as recommended by Mintzberg (2002), executives must

clearly understand the strategic direction and, therefore, the main goals, priorities and actions that are required. As defined by Lee and Puranam (2016, p. 1529), the precision of strategy execution is “the extent to which an organization’s actions correspond to its strategic intentions”. To keep that correspondence, the strategy has to be measurable. Some recommendations consider financial indicators such as the rate of return on assets, net profit or return on investment (Bakar and Ahmad 2010), while others consider non-financial measures (Ittner and Larcker 2003). However, as mentioned by Serra and Kunc (2015), strategy execution can also be measured by the degree of strategic goals accomplishment, as these goals reveal the gap between the current and desired states, and they are used as one of the performance measures. As reported by Siam and Hilman (2014), we may observe the correlation between the degree of strategic goals achievement and the profitability of the actions taken (reflected in the revenue dynamics), which is why the strategic goals are considered as one of the organizational performance measures (Chaola et al. 2015). For that reason, we wanted to verify whether:

H8 The higher the strategic goals achievement, the higher the revenue dynamics.

Therefore, strategic goals achievement is a mediating variable between the factors described above and revenue dynamics as a final predicted variable in the model. In order to achieve the research goal, we created an initial structural model, with direct and indirect relationships reflecting the hypotheses. Figure 1 presents the conceptual path model.

The factors represent either measurable or hard-to-measure elements of a comprehensive strategy execution approach. The research gap that we identify includes the relations between these factors as well as their influence on strategic goals achievement and revenue dynamics.

Research design

Sample and data collection

The research sample contained 150 firms listed on the Warsaw Stock Exchange main market and on the alternative New Connect market. The entities differed

Fig. 1 Conceptual path model. L—the importance of leadership for strategy execution, SC—the importance of strategy content for strategy execution, E—the importance of employees for strategy execution, R—the importance of resources for

strategy execution, P—the importance of processes for strategy execution, M—the importance of measures for strategy execution, SGA—strategic goals achievement, RD—revenue dynamics

in size and industry sector. This differentiated sample enabled us to investigate whether the relations between constructs are moderated by those characteristics. The stock exchange requires transparent and standard reporting. The respondents (CEOs, owners, strategy managers and board members) were responsible for strategy formulation and execution. A stratified random method was used to select the sample according to industry sector (defined according to the classification introduced at Warsaw Stock Exchange) and the company's size.

The study was conducted in 2017 with a direct questionnaire interview, and the survey was carried out by using the paper-and-pencil interviewing method. The main part of the survey investigated the importance of given factors for the strategy execution process. A five-point Likert-type scale was used to measure importance: (1) very low (5%); (2) low (25%); (3) medium (50%); (4) high (75%); and (5) very high (more than 90%). The data collection enabled the perception of respondents to be studied, which could be considered a limitation of the study. These latent variables represent qualities that are not directly measured (Tabachnick and Fidell 2001) and the constructs according to the subjective perspective of individuals (Borsboom et al. 2003). Revenue dynamics as a final predictive variable was measured objectively based on the data from financial reports.

According to the literature review presented, yet no scale has been developed that could sufficiently fit the research topic. Therefore, a new measurement scale was developed. Based on the EFQM concept

(Fundamental Concepts of Excellence 2013), six areas of operational (intra-organizational) risk were identified—leadership, strategy, employees, resources, processes and measures. Within those areas, the scale items were formulated based on the perspectives derived from the literature review and qualitative interviews with ten experts (CEOs responsible for strategy execution). The list of scale items is presented in “Appendix”. The scale validation included the content validity (EFQM concept) (Diamantopoulos and Siguaw 2006), facade validity (expert judges) (Hardesty and Bearden 2004) and nomological validity (Suddaby 2010). Measurement reliability analysis was performed using Cronbach's alpha coefficient. Path analysis was selected as a method for verifying the set of research hypotheses, which produce conceptual direct and indirect causal relationships between constructs (leadership is the only exogenous variable and a root in the causal model). The path analysis was performed using the structural equation modelling module SEPATH in the Statistica (ver. 12) software.

Results

The hypotheses were tested using SEM. Our results support some of the hypotheses and suggest that our conception of direct and indirect relations should be revised. Table 3 presents the correlation matrix and Cronbach's alpha.

Table 3 Correlation matrix between variables and construct measurement reliability (Cronbach's alpha on diagonal)

Variable	IL	IS	IE	IR	IP	IM	SGA	RD
L	0.861	0.814*	0.810*	0.792*	0.877*	0.836*	0.255*	0.106
SC		0.842	0.822*	0.881*	0.906*	0.813*	0.292*	0.019
E			0.822	0.835*	0.877*	0.819*	0.315*	0.102
R				0.804	0.865*	0.802*	0.237*	0.091
P					0.813	0.908*	0.283*	0.095
M						0.773	0.323*	0.078
SGA							—	0.158**
RD								—

* $p < 0.05$,** $0.05 < p < 0.1$

As presented in Table 2, all multi-item constructs are reliably measured with the scales proposed. Moreover, high and significant correlations between constructs can be observed. Revenue dynamics is significantly correlated only with strategic goals achievement.

Mediation analysis

Path analysis examining the mediation model based on the presented correlation matrix was performed according to the conceptual research framework. We evaluated model fit by means of the Chi-squared statistic, goodness-of-fit index (GFI), Bentler comparative fit index (CFI), the Bentler–Bonett normed fit index (NFI) and the standardized root-mean-square residual (RMR). The detailed research results are presented in Table 4.

The research results indicate that not all conceptual relations have been confirmed. H_1 predicted that

leadership is positively related to other constructs, and this hypothesis is supported. H_2 predicted that the importance of employees is crucial for processes in strategy execution (0.264), and it is supported. H_3 was based on the assumption that processes involved in strategy execution are positively impacted by strategy content as well as resources, and this is confirmed by the research results. H_4 predicted that strategy content has a positive impact on the measures of strategy execution, but the results were not significant ($p = 0.317$); thus, this hypothesis is not supported by the data. H_5 assumed that the strategy execution processes have a positive impact on the measures of strategy execution; the results present a high value of the parameter (0.807), so this hypothesis is confirmed. However, the research results do not confirm the impact of the processes on strategic goals achievement (H_6). In the case of H_7 , the positive impact of measures on strategic goals achievement is considered significant, so the hypothesis is supported. Finally, H_8

Table 4 Initial model estimates

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[L] → [SC]	0.814	0.028	29.007	0.000
[L] → [IE]	0.810	0.029	28.343	0.000
[L] → [R]	0.792	0.031	25.518	0.000
[L] → [P]	0.300	0.069	4.360	0.000
[L] → [M]	0.178	0.081	2.210	0.027
[SC] → [P]	0.400	0.047	8.558	0.000
[SC] → [M]	− 0.071	0.070	− 1.001	0.317
[E] → [P]	0.264	0.047	5.668	0.000
[R] → [P]	0.079	0.044	1.781	0.075
[P] → [SGA]	− 0.055	0.186	− 0.296	0.767
[P] → [M]	0.807	0.091	8.869	0.000
[M] → [SGA]	0.369	0.184	2.009	0.045
[SGA] → [RD]	0.158	0.081	1.946	0.052

Model fit: $\chi^2(15) = 156.7$,
 $p < 0.001$; CFI = 0.882;
 GFI = 0.793; NFI = 0.872;
 RMR = 0.075

assumed that the higher the strategic goals achievement, the higher the revenue dynamics; this hypothesis is supported, although the relationship is weak (0.158).

Based on these results, the final structural model was modified (Fig. 2). Insignificant relationships ($p > 0.1$) were removed from the initial model ([SC] $\rightarrow$ [M] and [P] $\rightarrow$ [SGA]).

To improve the model fit ($\chi^2(15) = 156.7$, $p < 0.001$; CFI = 0.882; GFI = 0.793; NFI = 0.872; RMR = 0.075), we respecified the model to explore whether the exclusion of insignificant relationships would influence the other relations. The results of this respecification are presented in Table 5 and in Fig. 2.

The fit of both the conceptual and the final models is comparable ($\Delta^2(2) = 0.836$; $p = 0.658$), so removing the insignificant paths between constructs from the initial model leads to a more parsimonious model describing the relationships between variables. Nevertheless, the final model still did not reveal the perfect fit indexes. The reason for this lack of fit could be insufficient divergent measurement validity of constructs, since the correlations between them reported in Table 2 are too high. Therefore, we introduced the aggregated model, where all the items are represented as a general awareness of strategy execution barriers. That awareness is defined as comprehensive barrier perception, which is different than the concept of strategic awareness introduced by Hambrick (1981). Cronbach's alpha for this aggregated construct is equal to 0.967, which allows to conclude that to measure that construct in the joined areas described, a shorter version of questionnaire could be used. The detailed relations in this framework are presented in Fig. 3. The direct impact of awareness on revenue dynamics was also verified.

The model has no degrees of freedom to test the goodness of fit, and we can observe in Table 6 that one

of the relations was not confirmed ([AW] $\rightarrow$ [RD]; $p = 0.611$), so it was removed.

The final aggregated model estimates are presented in Table 7. The model fit indexes confirm that the model fits the data well ($\chi^2(1) = 0.258$, $p = 0.612$; CFI = 1; GFI = 0.999; NFI = 0.986; RMR = 0.016).

Based on these research results, we may affirm that the aggregation of constructs was justified.

Moderated mediation analysis

Furthermore, a moderated mediation analysis was conducted by means of comparing the fit of two nested multigroup path models: the first model with all parameters assumed to be equal in all groups, and the second model with all parameters free to be estimated in every group. The difference of the Chi-squared statistics of the two nested models reveals a Chi-squared distribution with the number of degrees of freedom equal to the difference of degrees of freedom in two models. The main aim of the moderation analysis was to check whether the moderators, such as industry or the size of the company, affect the relationships that were identified in the model. We chose these moderators (size and industry) because they were used in the sample selection.

Our research revealed that there is no moderation in the case of company size. Initially, we estimated the model with separated constructs in three groups depending on the number of employees (about one-third of the whole sample in each group). All parameters can be considered similar regardless of the size of the company, which was also confirmed by the difference of Chi-square fit statistics ($\Delta^2(22) = 25.781$; $p = 0.261$).

However, moderation can be identified in the case of the industrial sector in which the company operates.

Fig. 2 Final structural model. * $p < 0.05$, ** $0.05 < p < 0.1$

Table 5 Final model estimates

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[L] -> [SC]	0.814	0.028	29.007	0.000
[L] -> [E]	0.810	0.029	28.343	0.000
[L] -> [R]	0.792	0.031	25.518	0.000
[L] -> [P]	0.300	0.069	4.361	0.000
[L] -> [M]	0.172	0.080	2.151	0.031
[SC] -> [P]	0.400	0.047	8.557	0.000
[E] -> [P]	0.264	0.047	5.668	0.000
[R] -> [P]	0.079	0.044	1.782	0.075
[P] -> [M]	0.750	0.076	9.865	0.000
[M] -> [SGA]	0.318	0.075	4.266	0.000
[SGA] -> [RD]	0.158	0.081	1.945	0.052

Model fit: $\chi^2(17) = 157.5$,
 $p < 0.001$; CFI = 0.883;
 GFI = 0.794; NFI = 0.871;
 RMR = 0.074

Fig. 3 Aggregated research model. AW—awareness of strategy execution barriers (comprehensive barrier perception including all factors: leadership, strategy, employees, resources, processes and measures factors), SGA—strategic goals achievement, RD—revenue dynamics

The model estimated for three types of industries revealed different parameters, which are presented in Tables 7, 8 and 9 ($\Delta^2(22) = 52.870$; $p < 0.001$). The industries were grouped and classified according to the Warsaw Stock Exchange classification: manufacturing and construction ($n = 48$); trade and financial services ($n = 53$); and other services ($n = 49$). The results for the estimates of the three models in separated subsamples are presented in Tables 8, 9 and 10.

Table 6 Aggregated model estimates

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[AW] -> [SGA]	0.304	0.075	4.035	0.000
[AW] -> [RD]	0.044	0.086	0.508	0.611
[SGA] -> [RD]	0.145	0.085	1.696	0.090

Table 7 Final aggregated model estimates

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[AW] -> [SGA]	0.304	0.075	4.035	0.000
[SGA] -> [RD]	0.158	0.081	1.949	0.051

Model fit: $\chi^2(1) = 0.258$, $p = 0.612$; CFI = 1; GFI = 0.999; NFI = 0.986; RMR = 0.016

In the case of other services, some relations—[L] -> [P] ($p = 0.113$) and [E] -> [P] ($p = 0.121$)—could be removed, which means that we could not identify any relation between the processes and leadership or employees (their importance for strategy execution). Moreover, there is no relation between SGA and RD, which was also revealed in the case of manufacturing and construction. We were also able to identify a negative relation in that industry sector, namely [IL] -> [M] ($p = -0.250$). Another negative relationship was identified in the case of trade and financial services: [R] -> [P] ($p = -0.213$). However, the fit indexes were not perfect.

Finally, we investigated the final aggregated model in order to reveal the moderation of size or industry; however, this was not confirmed (size: $\Delta^2(4) = 1.17$; $p = 0.883$; industry: $\Delta^2(4) = 0.908$; $p = 0.923$).

Table 8 Moderation analysis (industry): model estimates for manufacturing and construction

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[L] -> [SC]	0.762	0.063	12.036	0.000
[L] -> [E]	0.760	0.064	11.907	0.000
[L] -> [R]	0.723	0.072	10.049	0.000
[L] -> [P]	0.329	0.099	3.320	0.001
[L] -> [M]	-0.250	0.141	- 1.778	0.075
[SC] -> [P]	0.262	0.072	3.664	0.000
[E] -> [P]	0.409	0.072	5.709	0.000
[R] -> [P]	0.082	0.066	1.251	0.211
[P] -> [M]	1.131	0.123	9.175	0.000
[M] > [SGA]	0.253	0.141	1.791	0.073
[SGA] -> [RD]	0.143	0.148	0.970	0.332

Model fit: $\chi^2(17) = 71.117$,
 $p < 0.001$; CFI = 0.845,
 GFI = 0.706; NFI = 0.811;
 RMR = 0.127

Table 9 Moderation analysis (industry): model estimates for trade and financial services

	Parameters estimate	Standard error	<i>T</i> statistic	<i>P</i> value
[L] -> [SC]	0.842	0.040	20.867	0.000
[L] -> [E]	0.895	0.028	32.456	0.000
[L] -> [R]	0.847	0.039	21.571	0.000
[L] -> [P]	0.399	0.123	3.242	0.001
[L] -> [M]	0.499	0.138	3.624	0.000
[SC] -> [P]	0.486	0.073	6.694	0.000
[E] -> [P]	0.310	0.088	3.534	0.000
[R] -> [P]	- 0.213	0.075	- 2.837	0.005
[P] -> [M]	0.427	0.138	3.085	0.002
[M] > [SGA]	0.465	0.109	4.273	0.000
[SGA] -> [RD]	0.227	0.132	1.727	0.084

Model fit: $\chi^2(17) = 68.16$,
 $p < 0.001$; CFI = 0.895,
 GFI = 0.779; NFI = 0.868;
 RMR = 0.089

Table 10 Moderation analysis (industry): model estimates for other services

	Parameters estimate	Standard error	<i>T</i> statistic	<i>p</i> value
[L] -> [SC]	0.829	0.046	18.186	0.000
[L] -> [E]	0.770	0.059	12.942	0.000
[L] -> [R]	0.799	0.053	15.173	0.000
[L] -> [P]	0.194	0.122	1.585	0.113
[L] -> [M]	0.305	0.104	2.938	0.003
[SC] -> [P]	0.504	0.086	5.879	0.000
[E] -> [P]	0.118	0.076	1.549	0.121
[R] -> [P]	0.230	0.081	2.832	0.005
[P] -> [M]	0.664	0.100	6.656	0.000
[M] > [SGA]	0.301	0.133	2.267	0.023
[SGA] -> [RD]	0.073	0.145	0.502	0.615

Model fit: $\chi^2(17) = 104.507$,
 $p < 0.001$; CFI = 0.802,
 GFI = 0.682; NFI = 0.777;
 RMR = 0.116

Discussion

We investigated strategy execution in the context of the interdependency between the main constructs and

their impact on strategy execution results. We have confirmed the relations between employees and their impact on execution processes, which are crucial for accomplishing the tasks designed to achieve strategic

goals, as confirmed by Becker and Huselid (2006) and further extended by Greer et al. (2017). Furthermore, our results are coherent with Hitt et al.'s (2001) conclusion that human capital, as a separate resource, moderates the relationship between a company's strategy and performance results. We have also revealed the significant impact of leadership on other constructs (strategy content, employees and resources), which further influences the strategic goals achievement. This finding is in line with the results of Collier et al. (2004), who demonstrated that employee involvement increases the efficiency of execution processes. Our result contradicts the conclusions of Alamsjah (2011), who reported that involvement of CEO leadership during execution does not have a significant impact on its result; however, Alamsjah's study measured the perception of managers, whereas our study measured the statistical data on a company's performance. Our mediation analysis did not confirm the predicted relationship between strategy and measures. As proposed by Thorpe and Morgan (2007), the clarity of strategy concept and strategic goals should result in better coordination and reporting of the final outcome of execution activities. However, in our study, that relation was not significant. The relationship between processes and strategic goals achievement, which was discussed by Higgins (2005), presented a similar contradictory result. To explain this lack of a relationship, we tried to understand whether there are factors that may affect the interdependency.

We conducted the moderated mediation analysis, therefore, in order to investigate the influence of size and industry on our constructs. Our results do not reveal an impact in the case of size of the company, which contradicts Loan-Clarke et al. (2000) claimed that in SMEs there are more areas to which managers are forced to pay attention in order to execute the strategy successfully. Our findings do indicate a slight influence in the case of industry, although our results are not as significant as those presented by Garrido-Vega et al. (2014). Hence, the reported results are not coherent, and it is worth noting that some studies have found that different industries do not differ in terms of factors influencing the strategy execution process (Rho et al. 2001). Therefore, more complex and representative investigation is recommended.

Conclusions and limitations

As indicated by Miller et al. (2008), half or more of strategic initiatives are not successful because of factors that are under executive control. This is why we have focused on internal factors and tried to explain their interdependency. We created an initial model in order to investigate the direct and indirect relationships between our variables. Based on the initial results, we further modified the model, but this still did not reveal the perfect fit indexes; therefore, we introduced the aggregated model. As our constructs are reliable but not divergently valid despite conceptual heterogeneity, we proposed an aggregated model without detailed factors, and the model analysis confirmed that it fits the data. Based on our research results, we can conclude that the relationships identified in the model were not moderated by the size of the company, although the initial model could be specific for different industries. In the case of the aggregated model, industry and size are not relevant.

The main contribution of our study, therefore, is that the strategy execution process should be perceived as a set of integrated factors that should be analysed from an aggregated perspective. Such an approach was first introduced by Zeps and Ribickis (2015), and we have further developed this concept. Integrating all these factors requires a holistic and systematic approach and the development of an effective system of communication (Shimizu 2017). Our proposed model offers a conceptual framework that could be further developed to examine the process of strategy execution over time. We recommend that attention is paid to ensuring the effectiveness of all the constructs aggregated in one process, instead of focusing only on the efficiency of final results; accordingly, it is necessary to consider the execution process as an execution-as-learning concept (Lee and Puranam 2016). This is important because, as our study reveals, the awareness of strategy execution barriers (defined as comprehensive barrier perception) impacts the strategic goals achievement and not the revenue dynamics directly. This finding is also in line with Hrebiniak's (2013) argument that strategy execution is not a set of individual decisions but a series of interdependent actions. Future research could also include the perspective of micro-foundations to integrate the holistic view with the individuals'

identity and preferences that influence the context of interdependency.

The main limitation of our study was the type of data collected (opinion about the item investigated). This enabled us to study the perceptions of respondents while expressing their opinion about the impact of a particular factor. However, as these latent variables were not directly measured and the constructs were based on a subjective perspective, there were no objective data that could be used instead. This limitation was decreased in the case of measurement of performance, which included strategic goals achievement that was based both on the personal perceptions and opinions of CEOs and on objective financial data (revenue dynamics).

Acknowledgements The project is financed by the Ministry of Science and Higher Education in Poland under the programme “Regional Initiative of Excellence” 2019–2022 project number 015/RID/2018/19 total funding amount 10 721 040,00 PLN. Project No. 2014/13/D/HS4/01425 was financed by the National Science Centre.

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Appendix

Construct	Items
Leadership	Managers do not identify themselves with company's strategic goals
	Managers do not provide information about the strategy and the process of its execution to other employees
	Managers are not engaged in relations with company's stakeholders (employees, clients, suppliers, institutions, etc.)
	Managers do not execute the tasks assigned
	Managers have a low tendency to modify the strategy developed

Construct	Items
Strategy content	Strategy did not include the influence of external factors (changes in the industry, competitive situation, stakeholders' expectations)
	Strategy did not include the strengths and weaknesses of the organization (mainly the performance results and development potential)
	Strategy is not precise enough (it does not clearly describe development directions and strategic goals)
	Strategy is excessively formalized or inflexible
Employees	Strategy is difficult to measure and transpose for tactical and operational goals
	Employees do not have knowledge about the strategy (vision/mission/strategic goals) and the process of its execution
	Employees do not understand the relationship between the strategy and their everyday activities
	Employees are not included in the strategy execution process (by having decision-making power and active participation)
Resources	Employees are not motivated to implement the strategy
	Employees do not have sufficient knowledge and competences to implement the strategy effectively
	The organization has too small resource potential (human resources, materials, technology) to execute the strategic plans
	The organization has too small financial potential to execute the strategic plans
Processes	The resources are hardly flexible and difficult to modify
	There are difficulties with obtaining the information and knowledge about the resources necessary to implement the strategy
	There are difficulties with increasing the available resource potential according to strategic intentions
	The strategy communication process is ineffective
	The motivating process does not consider the effects of strategy execution
	The task delegating process is ineffective
	The process of controlling the level of strategy execution and identifying the deviations is ineffective
	The process of reaction to observed deviations (making necessary corrections and modifications) is ineffective

Construct	Items
Measures	A set of specific financial and non-financial measures used to strategy execution measurement has not been created
	The measures of strategy execution process do not reflect all strategic goals
	Measures of strategy execution process are not related to other measures of company's performance
	There is no regular strategy execution measurement process
	The system of measures is not modified during the strategy execution (if necessary)

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