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**GENERALIST VERSUS SPECIALIST CEOS FOR INDUSTRY 4.0:  
A COMPARATIVE LITERATURE REVIEW**

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*Abstract*

This review paper compares Generalist Chief Executive Officer (G-CEO) with Specialist Chief Executive Officer (S-CEO) by analysing the respective literature on a robust continuum of 54 years, from early 1963 to late 2017. The various study findings have been logically sorted into two resembling factors and exclusively classified into nine distinctive factors (sub-classified under three broad themes- leadership, strategic and operational perspective) between the two genres of Chief Executive Officers (CEOs). The two identified resembling factors are Predecessor CEO Specialization and Seasoned/Rookie Outside CEO. Juxtapose, the nine highlighted distinctive factors are: Innovation, Knowledge Based Strategist, Task Assignment, Compensation, Strategic Oversight, Board Expectations, Occupational Domains, Exit/Departure/Retention, and Industry Shocks Adaptability. In conclusion, both G-CEO and S-CEO have individual strength areas where they appear to be invincible, that are particularly needed to survive in the era of Industry 4.0. This paper appears to be the first literature review study within the breadth of management literature, noticeably comparing and contrasting G-CEOs with S-CEOs.

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**Keywords:** Generalist CEO, specialist CEO, top management, industry 4.0, literature review.



## 1. Introduction

Businesses are changing at an unprecedented pace. As projected by Schwab (2017), there will be at least three mega trends in the era of Industry 4.0; Physical, Digital and Biological- all three having dire impact on businesses and people who run the businesses. Interestingly, Schwab (2017) is of the view that organizations will not be able to readjust themselves easily. Business executives particularly Chief Executive Officers (CEOs) will have to revamp their individual and collective strengths, and stakeholders will have to redefine their expectations in the process. In this review article, we extend the discussion on the importance of CEO and how they can better adapt themselves in Industry 4.0, by classifying them into two basic genres; Generalist CEO and Specialist CEO. For reader simplicity, we will be using G-CEO and S-CEO as abbreviations in this article for Generalist and Specialist CEO respectively.

## 2. Problem Statement

The concept of Industry 4.0 is gaining momentum with the advancements in new technologies and changing business models. In terms of people development, digital skills will lead the Future of Work (FOW), which includes upskilling and reskilling of the workforce, which draws some key challenges for CEOs (Schwab, 2017). Researchers in CEO literature find that firm performance is a measure to evaluate CEO's efficacy (Fan et al., 2007). In the favour of S-CEO, Kirkpatrick and Locke (1991) comment that their interactions have enabled them to associate CEO's technical competence and knowledge to his or her effectiveness as a leader. On the contrary, supporting the G-CEO, Murphy and Zábajník (2004) make a point that general skills will gain more acceptability in market than the specialist ones with reference to a CEO. However, in all cases, a CEO is seen as a mastermind of a business (Ishak et al., 2012). This can be easily understood as each and every action of CEO has certain implication for the business reputation and performance. The problem is that most of the CEOs are either not ready for Industry 4.0 (Sony, 2019), or are less aware of what strategies to deploy in their businesses to navigate successfully through Industry 4.0 (Lu, 2017).

## 3. Research Questions

This paper conducts a comparative literature review to explore the breadth and depth of CEOs, and to propose different themes and viewpoints that resemble and distinct different CEOs. The paper focusses on the following two research questions:

Research Question 1: What are the resembling factors between G-CEOs and S-CEOs?

Research Question 2: What are the distinctive factors between G-CEOs and S-CEOs?

## 4. Purpose of the Study

The motivation of this review paper and the importance of selecting and studying this topic is to seek further clarity on questions like these: How important is it for CEO of a hospital to be a doctor? Can senior partner of consulting firm be successful without having originated his/her career as a consultant? Are engineering firms powerful in terms of innovation just because their CEOs are primarily engineers? Do

technology firms perform better when led by technology enthusiasts? Can a sports coach do well without being an exceptional player? This paper is divided into three sections: section one introduces the importance of CEO from the broad perspective of Industry 4.0, section two presents a comparative literature review in terms of resembling and distinctive factors of G-CEOs and S-CEOs, and section three concludes the heterogeneity of empirical studies on the topic.

## 5. Research Methods

There are two clear objectives of writing this literature review paper: (i) help readers understand what has been written on G-CEOs and S-CEOs in a multi-disciplinary manner and (ii) help readers to encapsulate future trends for CEOs in terms of their work generalization and/or specialization in leading Industry 4.0. This literature review has been designed in a structured and rigorous manner. First, the review timeline was selected. An initial review plan was sorted for 25 years' period, which then appeared inadequate as major classical theories date back to 1960s and the most recent economic patterns can be seen after 2010. Then realizing it, this paper now analyses the existing literature of 54 years, spanning from as early as 1963 to late 2017. Next, the relevant academic research publishers were to be ascertained. Therein, after doing a preliminary scanning of existing literature on the topic, the following nine publishers were identified as potential databases for G-CEO and S-CEO subject articles: EBSCO Host; Emerald Insight; Journal Citation Reports (JCR); Oxford Academic; Sage Journals; Science Direct; Springer Link; Taylor & Francis; Wiley. This then led us to a targeted extraction of 87 relevant journal articles on direct and indirect areas on our research topic.

Retrospectively, a major part of the literature review on the G-CEO and S-CEO is disintegrated in terms of the concepts, or more appropriately is somewhat disconnected in terms of common ideologies. This paper has made a successful attempt to add cohesion and more meaning to the existing literature on the subject. To proceed with this, various study findings have been logically sorted into two resembling factors and exclusively classified into nine distinctive factors between the two genres of CEOs: G-CEOs and S-CEOs. On drafting the mind map of these 11 factors (two resembling and nine distinctive), we were fortunate enough to successfully add more insights to our work. Realizing the need of reader clarity and comfort, we then condensed the nine distinctive factors into three main themes: leadership, strategic and operational perspective. This contraction of thoughts was made possible with three viewpoints in consideration i.e. competencies, board and business viewpoint respectively. This is illustrated in Table 01.

The underlying thoughts in clubbing the various distinctive factors into perspectives and viewpoints have been very instrumental in helping us better understand the existing literature on G-CEO and S-CEO. First, the distinctive factors such as innovation, knowledge base and task assignment can be easily related to the competencies of CEO; hence the first viewpoint of 'competency' has been used. Second, the distinctive factors such as compensation, oversight and board expectation can be related to topics under the control of the boards; hence the 'board' viewpoint. Third, we classify all the remaining distinctive factors of occupational domains, exit/retention and industry shocks as topics with general day-to-day functionality; hence the 'business' viewpoint. As can be seen, the three broad themes have been deduced from the respective viewpoints. 'Competency' viewpoint fall under the 'Leadership Perspective' theme being a CEO individualistic criteria. 'Board' viewpoint falls under the 'Strategic Perspective' theme as that represents

CEO+1 level (board members overseeing CEOs). And lastly, ‘Business’ viewpoint falls under the ‘Operational Perspective’ theme as it deals with execution and delivery of plans and procedures.

**Table 01.** Distinctive factors classification into themes and viewpoints

Themes	Viewpoint	Distinctive Factors
Leadership Perspective	Competencies viewpoint	1. Innovation 2. Knowledge Based Strategist 3. Task Assignment
Strategic Perspective	Board viewpoint	4. Compensation 5. Strategic Oversight 6. Board Expectations
Operational Perspective	Business viewpoint	7. Occupational Domains 8. Exit/Departure/Retention 9. Industry Shocks Adaptability

## 6. Findings

The findings of the literature review in this paper identify two resembling factors and nine distinctive factors between G-CEOs and S-CEOs. The findings on two resembling factors is discussed first, followed by nine distinctive factors. Putting these 11 factors together can help CEOs understand the contrast between G-CEOs and S-CEOs, and can enable CEOs to navigate through Industry 4.0 better:

### 6.1. Predecessor CEO Specialization

First factor that is irrespective of G-CEO and S-CEO is of predecessor CEO Specialization. As per the author, it is to normal to expect that CEO and Board will select the next CEO that matches specialization and strategy of the outgoing CEO, implying that CEOs need to be succeeded by similar incumbents. Barnard & Drucker (1984) and Cyert & March (1963) comment that the promotion idea by CEOs is set usually on the basis of "just like me". Once that happens, organization decay in terms of functional and institutional inbreeding starts. Vancil (1987) also suggests that this match of predecessor and successor is also considered when an internal candidate is groomed to be the CEO. A theoretical outlay as drafted by Smith and White (1987) on institutional specialization and functional specialization also portrays the same.

### 6.2. Seasoned/Rookie Outside CEO and Firm Performance

The second resembling factor that has been related in the literature irrespective of G-CEO and S-CEO is of Seasoned/Rookie Outsider CEOs. Charles Williams and Pao-Lien Chen (2016) study finds that Rookie Outsider CEOs (CEOs who are new to top management) give more firm growth in the short term, and Seasoned Outsider CEOs (CEOs who have been in top management) give more firm growth only in the long term. Rationality holds that candidates with prior relevant experience. However, it is surprising that in the case of top management teams, Rookie Outsider CEOs who don't have prior top management experience perform better. They socialize better, integrate faster, and are more motivated to bring a change, while Seasoned Outsider CEOs bring valuable strategic knowledge with themselves. The prime finding remains: Rookie outsider CEOs are more productive in short run, and Seasoned outsider CEOs otherwise.

### **6.3. Innovation**

Koo (2013) in the study evaluates S&P 500 CEO human capital from 1996 to 2003 and categorizes two types of CEO human potential, firm expertise and science expertise. The author study reveals that science expertise human capital (S-CEO) increases innovation by 16 percent, whereas firm expertise human capital (G-CEO) by 5 percent. This innovation increase has been determined through increase in patents and citations. Hence, according to this study, S-CEOs are more innovative for the firm than G-CEOs. Custódio and Metzger (2013) further apprise that G-CEOs considerably add more innovation, primarily because of their risk-tolerance attitude. In other words, G-CEOs have better labour market options and are easily reappointed elsewhere, they can risk innovation investments, and can still manage their reputation with failed projects.

### **6.4. Knowledge Based Strategist**

Knowledge Leadership is another exciting new area to understand the differences between G-CEOs and S-CEOs. It is now believed that managers fear knowledge sharing, probably because they consider knowledge as power and they want to protect it (Viitala, 2004). Ensuing that, Goodall (2012) commends S-CEOs as Expert Leaders. The author further argues that such CEOs have focus on their inherent knowledge which is the first step of knowledge leadership. These leaders enable their businesses to invest more in Research & Development (R&D) initiatives. Also, in case of Mergers & Acquisitions (M&A), knowledge leaders get more powerful as being custodians of their inherent knowledge in merging companies.

### **6.5. Task Assignment**

Drawing a little further from standard bearer attributes, Prasad (2009) mentions about developing an agency model of job assignments with task diversity of employees. Generalists are known to manage balances tasks, and specialist are recognized for executing imbalanced tasks. Generalists are favoured for multitask jobs, and specialists are favoured for only the tasks that they are good at. Also, generalists take more risks and hence get pay premium. In fact, generalists for their balances skills carry burden of success and failure simultaneously. MacDonald and Marx (2001) study bases incentive of generalists and specialists on effort allocation, whereas Prasad bases compensation with task assignments. The writings by Ferreira et al. (2012) compare information processing cost with communication cost. The authors conclude that specialists can make use of information in their area but they struggle in interaction with other specialists.

### **6.6. Compensation**

The progressive study on CEO compensation is conducted by Custódio et al. (2012) which claims that G-CEOs earn 19% higher compensation than S-CEOs. The authors were successful in creating a generalist index to determine if a CEO is generalist or specialist by using five different factors as mentioned earlier in the literature review. Also the authors prove that CEO compensation increases when organizations hire CEOs externally, and when restructuring is required. Datta and Datta (2014) in the study extend the Upper Echelon theory going beyond the CEO, and targets CFO in particular, qualifying whether a CFO is generalist or specialist. The author concludes that CFOs with MBA background are generalists whereas CFO with accounting background are specialists. The author also proves that generalist CFO earn more

than specialist CFOs, earnings include salaries and equity. More recently, Gounopoulos and Pham (2017) studying compensation patterns for G-CEOs and S-CEOs, discuss that G-CEOs earn higher packages. The result is that S-CEO have little say in labour market, with respect to executive compensation.

### **6.7. Strategic Oversight**

Studying British CEOs, there are five skills that CEOs self-perceive as the most important (Margerison 2007). They are interpersonal skills; business responsibility skills; achievement skills; early leadership skills; and broad business experience skills. Particularly, the fifth factor is of prime importance to the topic of G-CEOs and S-CEOs. It has often been witnessed that specialist executives get too narrow with their job roles and responsibilities and they often have to suffer due to this. The downside is that they don't get to experience other variety of functions and experiences in a certain organization. Another study by Chollet et al. (2015) suggests that strategic oversight of CEOs is gained by market knowledge, which has a great effect on company performance. This market knowledge is gained through CEO's individual personality traits. The author concludes that CEO traits affect market knowledge in three ways: (i) seeking intensity (how curious they are for the information), (ii) opportunity access (how far they can reach for information), and (iii) processing accuracy (how rational they can be with information).

### **6.8. Board Expectations**

Boards are very diligent when hiring CEOs; they consider the past performance of the firm with rigorous analysis (Custódio et al., 2012). Likewise, Fee and Hadlock (2003) affirm that boards eye high-performing firms when finding and selecting CEOs for their own firm, and also they are ready to pay an increased compensation package to the right candidates in most cases. Furthermore, Custódio et al. (2012) comment that Boards prefer to hire a G-CEO when their companies are large in size, are conglomerates, are more R&D rigorous and are highly leveraged. The reason why G-CEOs seem a fit in all these cases is because of their diverse skills and varying work background. Also, the author says that Boards are willing to pay a compensation premium to recognize such G-CEOs. Mishra (2014) points that agency problems are higher when the CEOs are generalists as compared to S-CEOs. The reason why this happens is because G-CEOs have incentives not in synchronization with the benefits of shareholders.

### **6.9. Occupational Domains**

There are various occupational domains through which generalist-specialist literature can be well related and better understood. An interesting study to understand specialist-generalist matrix of CEOs combining it with occupation pertains to Margerison (2007). The author surveyed CEOs on a spectrum of eight occupational domains. These domains range from sales and marketing to purchasing and inventory. As per the author, top three occupations for CEOs are: Sales, Finance and Production. Similarly, Goodall (2012)'s study has made some good real life inferences in three different settings from educational, medical and automobile industry. There have also been inclinations basing that financial CEOs are less innovative, and the culture that organizations witness is also not fast paced in terms of innovation. No clear evidence has been found about financial expert CEOs over-investing.

#### **6.10. Exit/Departure/Retention**

Ishak et al. (2012) study clearly explains the departure of CEO and its likeability. The author formulates an equation:  $\text{CEO turnover} = f(\text{firm performance, CEO powers})$ . This equation implies that if firm performance is low, CEO turnover is expected. Also, if the CEO is less powerful, CEO turnover becomes quite evident. Thereon, CEO turnover depends on both company's performance and CEO's inherent power domination. In the same way, Gounopoulos and Pham (2017) address the risk of high potentials leaving the organization. The authors quote job hopping as a high risk element for firms that employ G-CEOs. Also the executive search databases are on continuous lookout for more G-CEOs rather than specialist ones. Also, the authors illustrate that the CEOs who are open to experimentation are more inclined to classify themselves as G-CEOs.

#### **6.11. Industry Shocks Adaptability**

Guay et al. (2014) have made good progress by comparing CEO turnover with external industry shocks. A lot in management literature has been written on CEO turnovers but the underlying reason of CEO separations or terminations remains a vacuum. This study tries to understand why do Boards fire CEOs. The author concludes that CEO turnover depends on industry shocks, as the CEOs have to face industry shocks such as industry growth, investment, competition, and globalization. Also, Bertrand and Schoar (2003) reflect CEO styles, and suggest that they are preferred having a match with industry volatility and pressure. Guay et al. (2014) tend to believe that with increasing technology pace, it is easier for technical data or firm-specific data to be extracted and hence G-CEOs can perform better without major technical deficiencies. Also, in the same context, it has been concluded that G-CEOs are better prepared to deal and adapt with industry shocks.

### **7. Conclusion**

Through this literature review, first resembling factors between G-CEOs and S-CEOs were analysed. The theoretical outlay by Smith and White (1987) asserts that when hiring or promoting new CEOs (G-CEO or S-CEO), specialization and strategy at the end of the outgoing CEO's tenure is matched. Continuing the similarity factors of G-CEOs and S-CEOs, the study by Balsmeier and Buchwald (2014) establishes that hiring CEO from inside or outside of the organization is taken irrespective of the generalization criteria in the first place. Adding on, Williams and Pao-Lien Chen (2016) study finds that Rookie Outsider CEOs (CEOs who are new to top management) give more firm growth in the short term, and Seasoned Outsider CEOs (CEOs who have been in top management) give more firm growth only in the long term, irrespective of being classified as G-CEOs and S-CEOs. Next, we attempted to further refine the distinctive factors between G-CEOs and S-CEOs under three themes: Leadership, Strategic and Operational Perspective. The empirical studies from the 'Leadership' perspective can be best related with Custódio et al. (2012) study of CEO generalization/specialization index. From the 'Strategic' perspective, Fee and Hadlock (2003) affirm that boards eye high-performing firms when finding and selecting CEOs for their own firm, and also they are ready to pay an increased compensation package to the right candidates in most cases. The third and last 'Operational' perspective also helps us to distinguish between G-CEOs and S-CEOs. The study by Gounopoulos and Pham (2017) reflects that S-CEOs possess depth of functional roles, whereas G-CEOs

have breadth of work diversity. In our knowledge, this is the first review paper that compares the existing literature on generalists and specialists at the top management level, in helping us better understand G-CEOs and S-CEOs, and enabling us to decide which CEO can do better in which area to survive and thrive in the age of Industry 4.0.

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