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From a learning to a smart nation: the rise of the digitalization megatrend and Singapore's development

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Abstract

Purpose – The purpose of this article is to discuss the "learning nation" concept and examine the characteristics and implications of using the "learning" premodifier in this nation-building program.

Design/methodology/approach – This article reviews how the "learning" aspect is inter-related to a series of national information and communication technology masterplans and includes a comparative analysis of the related premodifier "smart" as Singapore sets forth its ambition to become a "smart nation" as part of the digitalization megatrend. A print media indicator and Google Trends form part of the methodology to ascertain the rise of digital technology over a certain period. The former technique involves identifying relevant bibliographic databases and analyzing the volume of publications. The latter technique is a real time index of the volume of queries that users input into Google.

Findings – It is suggested that using the term "learning nation" previously and more recently "smart nation" is a consequence of the rise of the digitalization megatrend. The "smart-ness" involves learning about digital technologies, developing digital competencies and harnessing the benefits of these digital capabilities. From a public policy perspective, the article showcases how a city-state can transform itself through technology by riding on megatrends. Also, there is a need to be selective in developing specific areas for the application of digital technologies.

Originality/value – This article contributes to a better understanding on the frequent usage of the word "learning" as a premodifier and Singapore's nation-building journey through human capital development and digitalization.

Keywords Nation-building, Human capital development, Digital transformation, Digital technology, Premodifier

Paper type Case study

Introduction

In 1997, the Singapore government launched the "Thinking Schools, Learning Nation" vision to complement a knowledge-based economy by creating a thinking and inquiring workforce (Singapore Ministry of Education, 1997). In 2014, with the advent and proliferation of digital technology, the "Smart Nation" initiative was announced in Singapore to harness digital technologies to beat competition and improve livelihoods (Lee, 2014). This article discusses the "learning nation" concept and examines the characteristics and implications of using the "learning" premodifier in this nation-building program. It reviews how the "learning" aspect is inter-related to a series of national information and communication technology masterplans. It

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also includes a comparative analysis of the related premodifier "smart" as Singapore sets forth its ambition to become a "smart nation" as part of the digitalization megatrend.

The genesis of this article arose from the frequent usage of the word "learning" as a premodifier in contemporary management and social sciences literature, for example, "learning organization" (Senge, 1990), "learning economy" (Lundvall & Johnson, 1994) and "learning nation" (Singapore Ministry of Education, 1998). A "premodifier" is "the part of a noun group, adjective group, or verb group that comes before the most important word and adds information about it" (Macmillan Dictionary, 2022). Consequently, it calls into question the definition and meaning of the word "learning" which leads to its popularity in usage as a premodifier in recent times. In this article, special attention will be paid to how the premodifier changes from "learning" to "smart" for the word "nation".

The main purpose of this article is to explore and examine the usage of the word "learning" as a premodifier to the word "nation" and its subsequent change to "smart" as part of Singapore's nation-building journey. Singapore as a nation has initially embraced the term "learning nation" in the 1990s and more recently adopted the "smart nation" initiative in the 2010s. Various interesting questions related to the usage of "learning" as a premodifier to "nation" and the subsequent change of the premodifier to "smart" arise – Why is "learning" such a commonly used premodifier? What triggered the use of "learning? What does "learning" mean for Singapore as a "learning nation"? Why did Singapore replace "learning" with "smart" for the "smart nation" initiative? What can one learn from the frequent usage of "learning" as a premodifier? In the Singapore example, it is suggested that using the term "learning nation" previously and more recently "smart nation" is a consequence of the rise of the digitalization megatrend. The "smart-ness" involves learning about digital technologies, developing digital competencies and harnessing the benefits of these digital capabilities.

The remaining sections of the article are structured as follow: First, a write-up on premodifiers in English grammar and their association with other parts of the English language. A brief explanation of the key words including "learning", "smart" and "nation" is presented. Second, the notion of a learning nation as proposed by Singapore in the 1990s and the idea of learning are explained. Third, the recent rise of the digitalization megatrend across the globe is highlighted which suggests an emphasis on using digital technologies to build future governments, businesses and societies across the globe. Fourth, Singapore's journey towards a smart nation beginning in 2014 and riding on the digitalization megatrend. Then, there will be a discussion on the usage of the word "learning" and "smart" as premodifiers with an emphasis in the case of Singapore. The final section ends with some suggestions for future research work.

The usage of premodifiers in English grammar

Traditionally, English grammar classifies words based on the eight parts of speech, namely, the verb, the noun, the pronoun, the adjective, the adverb, the preposition, the conjunction and the interjection (Ives, 1957). For example, a noun is "a word that refers to a person, a place or a thing, a quality or an activity" (Oxford Learner's Dictionaries, 2022a). An adjective word is one which "describes a person or thing" (Oxford Learner's Dictionaries, 2022b). It gives more information such as traits and qualities about a noun. A "premodifier" is "the part of a noun group, adjective group, or verb group that comes before the most important word and adds information about it" (Macmillan Dictionary, 2022). In other words, a premodifier enhances the meaning of the key term. It is common practice to put two nouns together or an adjective before a noun to form a term, for example, "learning nation" and "smart nation".

There are several key words that are covered in this article. They are "learning", "smart" and "nation". The word "learning" as a noun is "the process of learning something" (Oxford

Learner's Dictionaries, 2022c). In fact, the word "learning" may function as a noun, an adjective or other grammatical forms such as a present particle or a gerund subject to the context (Sun, 2003). It is interesting to note that as a verb or action word, to "learn" is "to gain knowledge or skill by studying, from experience, from being taught, etc." (Oxford Learner's Dictionaries, 2022d). In British English, the definition of the adjective "smart" generally denotes "people looking clean and neat or well-dressed in fashionable and/or formal clothes" (Oxford Learner's Dictionaries, 2022e). However, in a technological context, the word "smart" also suggests an impression of an object associated with electronic applications (Lutkevich, Rosencrance, & Cobb, n.d.). For example, a smart card is a small plastic card with a built-in microprocessor which information is stored in electronic form. Finally, the word "nation" is a noun that is defined as "a country considered as a group of people with the same language, culture and history, who live in a particular area under one government." (Oxford Learner's Dictionaries, 2022f).

This section introduced the various parts of the English language and the idea of premodifiers. It has also provided working definitions on the key words to be discussed subsequently in the article. This brief overview is to lay the groundwork on the discussion and examination on the usage of the word "learning" as a premodifier as part of Singapore's nation-building journey from a "learning nation" to a "smart nation".

The notion of a learning nation and the idea of "learning"

The notion of a learning nation was introduced in June 1997 by the then Prime Minister of Singapore Goh Chok Tong as part of the "Thinking Schools, Learning Nation" (TSLN) vision (Singapore Ministry of Education, 1998). The main rationale behind the initiative was to propel Singapore into becoming a knowledge-based economy with a thinking and inquiring workforce (Teo, 1999). As competition rises, the nation state needed to harness its human resources to build a workforce which can thrive in the 21st century. The well-being of the nation would depend on the people's capacity to learn and pursue innovative technologies (Singapore Ministry of Education, 1997).

An important aspect of the TSLN vision was how information technology (IT) could be used to support the education system (Koh & Lee, 2008). Specifically, the "Masterplan for IT in Education" was initiated in the same year to augment learning and teaching practices (Koh, 2004). The change was driven by the impact of globalization due to economic or technological factors and the relevance of education for a workforce to meet these challenges. The scope was nation-wide and covered both students who attended compulsory education at the various levels and workers who have left the education system. Both groups were expected to develop competencies to help the nation stay competitive. The entire education system was required to equip future and existing working population with critical thinking and IT skills.

The TSLN concept was applied at two levels. Beginning with the notion of thinking schools, students were taught critical skills to prepare them for the future. At the school level, young Singaporeans were encouraged to develop creative thinking skills (Tan, 2006). "Thinking schools" served to develop future generations with curriculums that promoted creative thinking skills and supported by IT. The stakeholders included students, teachers and parents (Singapore Ministry of Education, 1997). In the schools, students were assigned multidisciplinary projects covering subjects such as mathematics, science and English and supported by IT tools (Saravanan, 2005). Through the development of curriculum which incorporated IT as part of learning, teachers begin to realize that they were also participating in a process of lifelong learning (Low-Ee, 2001). Professional communities where teachers network, exchange information and collaborated on self-initiated projects, were formed (Hairon, 2020). For the working adults, they were expected to embark on lifelong learning to keep their skills relevant in the economy.

At the national level, lifelong learning programs for professional development and personal enrichment were also supported. The World Bank has referred to human capital as consisting of "the knowledge, skills, and health that people accumulate throughout their lives, enabling them to realize their potential as productive members of society" (World Bank, 2019). Thus, human capital development in the context of education and training would then mean improving the life-long knowledge and skills of the people as contributing members of society. From this perspective, the notion of a learning nation went beyond the traditional educational institutions to human capital development for the workforce in the form of continuous learning to ensure that their skills remained relevant to meet market needs. Thus, many stakeholders across the public and private sectors were involved.

On examination, the notion of a learning nation is clear and well-defined. The reason is because the narrative stipulated the target groups with specific outcomes. The school-level learning initiatives directed at the students were aligned with continuous learning effort at the workplace. The idea of TSLN explicitly stated that the result is a nation which must remain relevant and thrive in a global economy. Identifying both students and workers among the various stakeholders was a logical step as part of the overall progression to build a knowledge-based economy. Another important factor was the application of a series of information and communications technology (ICT) masterplans to enhance learning in schools (Natarajan, Lim, & Cheah, 2018). IT was earmarked as a key enabler to enhance the core skills to be developed. This addition elaborates on the definition of a learning nation by including an IT component. IT has always been an important tool to raise productivity and promote innovation. Thus, the idea of "learning" in Singapore's context included key areas about who to learn, why to learn and the tools to help people to learn.

Essentially, "learning" involved students and workers with the purpose of growing the economy. IT was highlighted as an important factor to argument learning especially at the school-level. The close association between "learning" and technology is a result of the rise of the digitalization megatrend. Megatrends represent major patterns emerging in the macroenvironment that are likely to have significant impacts in the consumer and producer markets in the foreseeable future. Consequently, it is noted that whenever the word "learning" was used, for example, in "learning nation" it always includes some form of IT or ICT – both terms are used interchangeably in this article.

The rise of the digitalization megatrend

In recent years, the global economy has witnessed first-hand the transformative powers of digital technologies (Bienhaus & Haddud, 2018). Government, businesses and societies experienced tremendous disruptions and must relook at the way they operate because of the digitalization megatrend (Hoe, 2019a). For example, an organization which has been using manual processes to engage its customers will have to develop a digital platform and apply automation to improve user experience. However, such global technological forces are not new and have been around for quite some time. There were several major industry transitions that were brought about by changes in technology in recent times.

According to the World Economic Forum, the First Industrial Revolution arose because of the availability of steam power for production, the Second Industrial Revolution due to the application of electricity for mass production and the Third Industrial Revolution was signified by the conversion of analogue to digital means to automate production (Schwab, 2016). In the current Fourth Industrial Revolution, the interconnectivity of digital technologies blends the business applications across the physical and digital worlds. More recently, digital transformation has become a focus for organization in recent years mostly driven by rapid advancements in digital technologies. These digital technologies include but are not limited to Internet of Things (IoT), social media, mobile apps, artificial intelligence, augmented and virtual reality (Paul *et al.*, 2024).

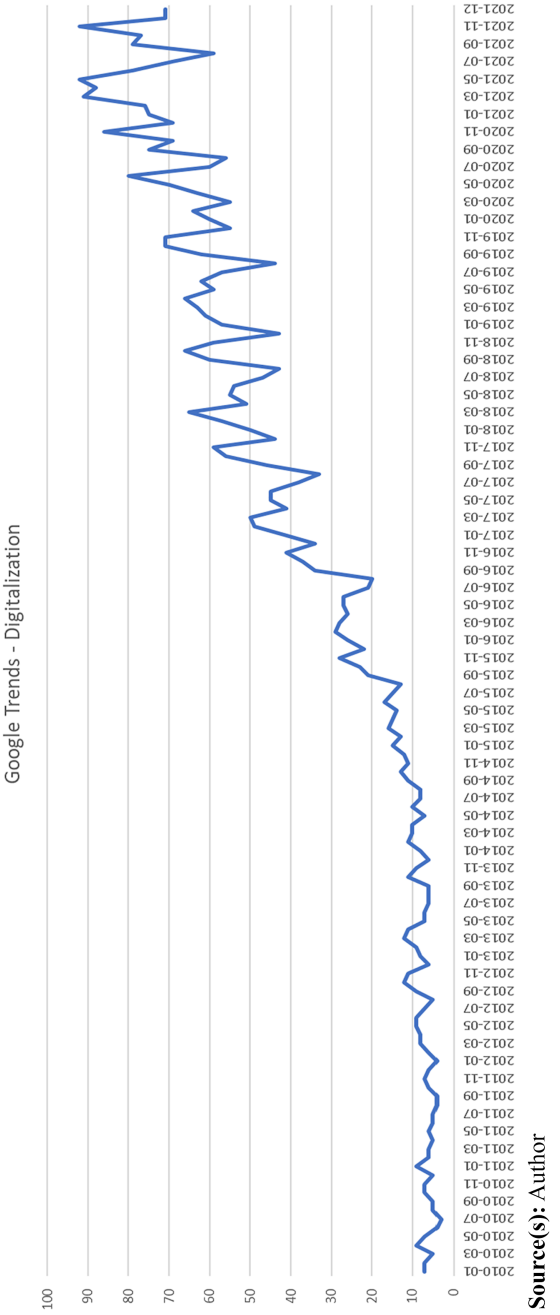
There are many frameworks that have been developed to analyze digital transformation. For example, Elia, Solazzo, Lerro, Pigni, and Tucci (2024) proposed a digital transformation canvas covering key element such as strategy, operational pillars, value and pitfalls. Agostino and Costantini (2022) crafted a measurement framework for assessing digital transformation comprising of five main dimensions, namely, people, technology, process, customer and strategy and investment. Also, there are integrated frameworks which suggest that key enablers such as leadership, structures and culture can help industrial organizations achieve better collaboration, customer-centricity and agility as part of the digital transformation journey (Imran, Shahzad, Butt, & Kantola, 2021).

One quantitative approach to determine the rise of the digitalization megatrend is using print media indicators and Google Trends to discover the number of publications and searches related to digitalization among scientific and casual researchers over time (Hoe, 2019b). Such a combined method may be used as a proxy to shed some light on when this megatrend began. The aim is to identify the period when digitalization became popular around the world. A proxy measure which provides an indication of the popularity of the term by the frequency of searches on business databases and the internet can be found through ABI/INFORM and Google Trends respectively.

Using print media indicators as part of quantitative empirical research on "organization concepts" has been a popular choice among management scholars (Benders, Nijholt, & Heusinkveld, 2007). Essentially, the technique involves identifying relevant bibliographic databases and analyzing the volume of publications. In this study, the choice of bibliographic databases is based on the comprehensiveness of the records in its international coverage on the topic of business. ABI/INFORM is a business database that covers full-text journals, dissertations, working papers, key business and economics periodicals. It can be used to identify the number of publications related to a group of keywords and parameters.

The data from ABI/INFORM and Google Trends was collected in 2022. The keyword "digitalization" and publication types which include wire feeds, newspapers, reports, trade journals, scholarly journals, magazines, blogs, podcasts, websites, working papers, conference papers/proceedings, dissertations/theses and books were first selected as parameters in the ABI/INFORM database. Then, the period parameter was set between 1980–2021. Next, publication titles and abstracts were chosen as additional parameters. The search results produced based on the selected parameters on the number of publications related to digitalization was 76,872. On further investigation, the number of publications between 2010–2021 was 75,729. This figure suggests that there is a spike in the number of publications from 2010 onwards.

For the next step, data was collected and analyzed using Google Trends. This tool is a real time daily and weekly index of the volume of queries that users input into Google (Choi & Varian, 2012). Google Trends was selected as part of the combined method together with print media indicators to analyze megatrends because it presents the actual search requests made by users through the internet. These datapoints are also largely raw and unprocessed which give a somewhat more trueful picture of user choice and preference over time. The index is normalized to 100 for ease of reference. In technical terms, the maximum query share in the time period specified is normalized to be 100 while the query share at the initial date being examined is normalized to be zero. It can be used as a substitute to ascertain the level of interest on a particular topic of casual or general users. The keyword "digitalization was input into Google Trends with the parameters set at worldwide, custom time range of January 2010 – December 2021, all categories, and web search. The Google Trends search results produced were the graphed (see Figure 1). It is interesting to note that keyword search results for "digitalization" spiked from around end of 2015 onwards. This result seems to suggest that there has been a sudden growth in interest on the topic worldwide from 2015 to 2021.



Source(s): Author

Figure 1.
Google trends search results for the word "digitalization" from 2010 to 2021

Coincidently, the World Economic Forum also launched the digital transformation initiative in 2015 (World Economic Forum, 2022). Briefly, the concept of digital transformation refers to the acceleration of applying current and emerging digital technologies and developing business models associated with such technologies (World Economic Forum, 2024). The idea is to use various digital technologies to augment business practices to enhance user experience. The group forecasted that there would be a significant impact of digital technologies across various sectors moving forward. Such technologies include 3D printing, artificial intelligence, autonomous vehicles, big data analytics, IoT and robots. Of course, many industries such as automotive, consumer, electricity, healthcare, logistics, media, travel, oil and gas, professional services, telecommunications and mining would be affected. To sum up, based on a bibliographic database and Google Trends search, the rise of the digitalization megatrend seems to happen around 2010 to 2015 and onwards.

A smart nation journey

Singapore has been a strong proponent in using information and communications technology to drive economic success. Technological innovations have helped to accelerate Singapore's growth. The various key milestones of Singapore's smart nation story include national IT masterplans and major public agency e-government projects to improve the lives of the citizens and develop the economy (Smart Nation and Digital Government Office, 2024). These digital initiatives demonstrate how the country transforms itself through technology over the years. The government aims to continue to drive the economy using technology as a key enabler (Tharman, 2015). The various national information IT masterplans that have been developed over the years as part of nation-building include the National Computerization Plan in 1980, National IT Plan in 1986, IT2000 plan in 1992, Infocom 21 plan in 2000, the Connected Singapore plan in 2003, the Intelligent Nation plan in 2010 and Infocomm Media 2025 plan in 2015 (Hoe, 2016).

A recurring theme and challenge for Singapore has always been maintaining its competitive advantage in the region and internationally. Thus, education plays a critical role in preparing students to excel in an increasingly complex environment and eventually thrive in the workforce. At the same time, IT has been recognized as a key enabler to fast-track economic growth. Consequently, IT in education has always been an integral part of the Singapore's national IT masterplans (Singapore Ministry of Education, 2002; Koh & Lee, 2008). A unique feature of the concept of a learning nation is how it is integrated into the state's IT masterplans. The IT initiatives aim to change the way teaching and learning are done in the classrooms (Natarajan & Laxman, 2021).

In 2014, the Prime Minister of Singapore Lee Hsien Loong revealed the city-state's smart nation vision (Lee, 2014). The vision sought to apply ICT to improve people's lives and create more opportunities to overcome the state's physical limits. Through the smart nation initiative, the government endeavors to co-create innovative people-centric solutions with industry and citizens. Ordinary citizens and individuals can also benefit from digital technologies and lead a better quality of life around work, education and healthcare (Poon *et al.*, 2017). There are three priority areas, namely, elderly, transportation and data which the initiative will specifically address (Lee, 2015). The rational is because of the fast-greying population, traffic congestion and ease of data accessibility. The protection of digital assets would also feature prominently under the cybersecurity theme (Balakrishnan, 2014).

The smart nation initiative is a whole-of-nation approach to enhance the quality of living and increase productivity for the country (Smart Nation Programme Office, 2015). While the initiative is not about technology per se, digital technologies do play a key enabling role in many projects. The digital technologies employed are really a means to an end (Balakrishnan, 2015a). For example, some of the strategic national projects introduced

were National Digital Identity framework, E-Payments, Smart Nation Sensor Platform, Smart Urban Mobility and Moments of Life (Smart Nation and Digital Government Office, 2017). Essentially, these are platforms which utilize digital technologies such as big data analytics and artificial intelligence to engage an ecosystem of stakeholders. In addition, various other types of digital technologies such as IoT, 3D printing and robotics have also been highlighted as high potential areas (Balakrishnan, 2015b). Of course, with the introduction of these digital technologies, new jobs with new skills in these areas would be required (Ang, 2015).

With the formation of the Smart Nation and Digital Government Group within the Prime Minister's Office, it took on the digital government pillar to drive digitalization efforts in the public sector (Hoe, 2018). At the same time, the Ministry of Communications and Information led the digital economy and digital society pillars. Through the establishment of the Digital Government Blueprint, public sector agencies were encouraged to experiment with emerging digital technologies and incorporate them into their workplans. The public agencies have been very active in engaging the industry to realize a series of digital plans. These industry digital plans include the Singapore Payments Roadmap by Monetary Authority of Singapore in collaboration with KPMG (KPMG, 2016), Legal Industry Technology and Innovation Roadmap (Singapore Ministry of Law, 2020), Singapore Cybersecurity Strategy (Cyber Security Agency of Singapore, 2021), Industry Digital Plan for Social Services (National Council of Social Service, 2021) and Process Construction and Maintenance Industry Digital Plan by Infocomm Media Development Authority in partnership with Enterprise Singapore (Infocomm Media Development Authority, 2021). For the Singapore Budget 2024, the government continues to encourage works to re-skill and take on jobs in digitalization (Abu Baker, 2024).

Discussion

The intent of the article is to explore and examine the usage of the word "learning" as a premodifier as part of Singapore's nation-building journey. Some key questions were raised at the beginning of the article. This discussion section will revisit these questions and to provide responses to better understand the features and characteristics of premodifiers such as "learning" and "smart" in English grammar.

The first question is "Why is 'learning' such a commonly used premodifier?" One possible explanation on its common usage in contemporary management literature could be that "learning" is closely related to knowledge. With knowledge, one can foster new and different ways of doing things which lead to innovation. The importance and significance of knowledge as a strategic resource in the production of new innovations and empowering new forms of work is undeniable (Lundvall, 1992; Florida, 1995). Very often, this general idea of "knowledge" leading to monetary success is discussed around the theme of "learning" (Hudson, 1999). This simply means that an outcome of knowledge creation is that an entity can increase its earning capacity to make more profits. An implicit assumption is that learning creates knowledge which enables new ways of doing things. Learning leads to new knowledge creation (Darling, 2014). Through various learning activities such as problem solving and reflection, knowledge is gained. In this instance, the relationship between learning and knowledge is closely connected where knowledge is a result or product of learning (Antonacopoulou, 2006). "Learning" as a premodifier becomes popular because it signifies this characteristic when it is put before another noun to form a new term. Of course, a natural question arises "Why is knowledge not used in the first place as a premodifier to nation?". A simple Google Trends search on the words learning and knowledge and comparison of interest over time on these terms suggest that the former consistently lead the latter in popularity since 2004 in Singapore. This result partially explains why nation was

used together with learning instead of knowledge despite their close relation. One could also speculate that in coining the term "learning nation", the emphasis was on the importance of the actions to be taken rather than the particular end. Learning is an active and constructive process (Sun, 2003). By stressing on the process instead of the product, the concept of the learning nation directs the effort towards the act of doing which may lead to different results as a better alternative to being fixated to an anticipated outcomes which may limit the scope of innovation.

The second question is "What triggered the use of 'learning'?" In the case of the "learning nation", Singapore adopted a pragmatic approach to overcome its natural constraints (Quah, 2018). In the formulation of economic policies, a key consideration is to attract multi-national corporations (MNCs) to set up bases in the country. For this to happen, MNCs must see the value in moving there. Being a small-sized nation with an open economy that is heavily reliant on international trade and finance, the nation is constantly faced with intense global competition. To stay ahead, "the learning nation" needs to have the best technologies and processes to produce goods and services at reasonable cost. Driven by such factors, Singapore needs to create breakthroughs and innovations. Thus, the word "learning" is triggered because its meaning suggests "the process to gain knowledge or skill by studying, from experience, from being taught" and so forth. This explanation also provides an answer to the third question "What does 'learning' mean in the case of a 'learning nation'?" The "learning" implies that the nation will engage in a process to gain knowledge and skills. More specifically, Singapore as a "learning nation", will continuously reskill and upskill the workforce to stay ahead of competition.

The next question is "Why replace 'learning' with 'smart' in the case of the 'smart nation'?" In the case of Singapore using the term "learning nation" previously and more recently "smart nation", the argument being put forth is that the change from "learning" to "smart" is a consequence of the rise of the digitalization megatrend. This "smart-ness" involves learning about digital technologies. While the world has always experienced global technological trends, such digitalization forces have become more distinct in recent years. As suggested by the print media indicator and Google Trends search results, the digitalization megatrend took off around 2010 to 2015 and onwards. This phenomenon suggests a significant shift towards digital technologies as a critical success factor for competitive advantage. At the same time, the word "smart" seems to suggest a greater emphasis on digital technologies with a more specific digital know-how and skills to be acquired compared to the premodifier "learning". For example, smart technology may be broadly defined to cover groups of digital technologies which include IoT, connected devices and programmed devices (Nanowerk, 2022). "Smart" seems to indicate a broader set of more advanced digital skills beyond basic information skills. These advanced skills could cover areas such as cybersecurity, big data analytics and artificial intelligence. While the "smart nation" vision is not related to or a direct evolution of the "learning nation" vision, it appears to be a natural progression of the notion given the rise of digitalization megatrend or digital technologies. The replacement of the premodifier serves to broaden and deepen the application of digital technology to strengthen the country's position regionally and internationally.

Finally, to the question "What can we learn from the frequent usage of 'learning' as a premodifier?" As mentioned, the word "learning" suggests a process of gaining knowledge or skills. This generally positive description of the word makes it a popular choice among management thinkers and writers to select it to add more meaning to certain terms. In doing so, the premodifier is useful in conveying a more favorable message across to the readers. Thus, to the casual reader, the frequent usage of "learning" seems to be harmless. On the other hand, the constant exposure to a particular word may dilute its importance and meaning. This may relegate the word into something that is generic and ordinary. The real downside is that readers are no longer able to derive its true meaning due to frequent and

unreflective exposures to the premodifier. An over-familiarity with the meaning of a word may lead to casual usage resulting in a failure to appreciate its true implications in different contexts.

From a public policy and management perspective, technology features very prominently as part of Singapore's national development journey. The practice of harnessing technology to spur economic growth in the past and present is evident in Singapore's effort to improve the well-being of its citizens. Policy implications-wise, the wide-spread adoption and application of technology does provide tangible economic and social benefits across both the public and private sectors. Singapore has recognized the tremendous economic potential of a digital economy (Lee, 2021). It is now championing digitalizing cross-border trade flows and facilitating flows of digital services around the region. Fast-forward to recent years, there are many examples of how emerging IT or digital technologies are changing the way work is performed (Le Blanc, Ulfert, Peeters, Rispens, & Scherer, 2024). An often-mentioned case is the deployment of ChatGPT in many areas of the business such as customer service and human resource to reinvent work activities and tasks. In next two years, digital technology trends are expected to grow even faster resulting in more changes to the public sector (Buchholz, 2024).

Singapore has been actively promoting the use of artificial intelligence in the public and private sectors. A key approach is to be selective in developing specific areas such as population health and climate change on the application of artificial intelligence. This is because national and local governments should be selective in introducing smart city practices and digital technologies in view of contextual variables (Noori, Hoppe, De Jong, & Stamhuis, 2023). To elaborate, adapting international best practices to meet local requirements is crucial for the successful integration of digital technologies into public services.

Limitations and future research

There are several limitations in this research study which need to be highlighted. Firstly, the overall approach adopted in the research design. The research design is framed around the novel idea of using English grammar as a starting point of analysis on the frequent usage some common words. Consequently, the discussion and arguments provided to explain Singapore's transition from a learning to a smart nation with a common technology theme is grounded using the approach. Furthermore, the "empirical evidence" provided were obtained from Google Trends to support the notion on rise of the digitalization megatrend. It is noted that this form of examination is but one approach to illustrate Singapore's national development policies and practices. Other qualitative and quantitative research designs could provide similar conclusions or otherwise. Secondly, researcher bias. As the evidence taken and conclusions drawn were mostly taken from ministerial speeches and publicly available government reports, there may exist certain bias due to how this information are interpreted and, thus, may be subjective.

The frequent usage of certain words is a common practice in modern times. Many such words appear in various forms in an English sentence. This article focuses on the premodifiers "learning" and "smart". The analysis and discussions have uncovered many opportunities for scholars to conduct further research. For example, some studies can concentrate on the meaning of "learning" based on certain concepts and disciplines. These theories can be from cognitive science, organizational behavior or critical studies. In addition, an examination to understand the nature of the actors who are "learning" may be necessary. This is because "learning" may happen at various levels, for example, individually, collectively, regionally or nationally. Finally, from a technological perspective, how governments are transforming their policies and processes because of the digitalization megatrend.

Digitalization, national development and digital government are relevant topics that are of interest among public policy makers and management in recent times. More thorough studies are required to improve one's understanding of their inter-relationships. Thus, for future research, scholars may wish to consider questions such as – What is the relationship between digitalization and national development?, What factors affect the rate of digital technology adoption among the citizens?, Which industries have evolved because of the transition from a learning to a smart nation? and What are the side effects of digital technology on society? to advance the body of knowledge.

Conclusion

The word "learning" is frequently used as a premodifier in contemporary management literature. This practice calls into question the definition and meaning of the word "learning" which leads to its popularity in recent times. One possible explanation of its common usage in contemporary management literature could be that "learning" is closely associated with knowledge. With knowledge, one can foster new and different ways of doing things which lead to innovation. Also, "learning" implies a process to gain knowledge and skills. More specifically, a "learning nation" will continuously reskill and upskill the workforce to stay ahead of competition. In the Singapore example, it is suggested that using the term "learning nation" previously and more recently "smart nation" is a consequence of the rise of the digitalization megatrend. The "smart-ness" involves learning about digital technologies, developing digital competencies and harnessing the benefits of these digital capabilities. From a public policy perspective, the article showcases how a city-state can transform itself through technology by riding on megatrends. Also, there is a need to be selective in developing specific areas for the application of digital technologies.

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