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EDITOR'S NOTE **VOL 9, NO 1 (2019)**

Developing new models for intelligence studies

The aim of any social science to develop theories and/or models to better understand the business reality. We are happy to see that a majority of contributions this time do exactly that.

The first article by Nuortimo is entitled "Exploring new ways to utilise market intelligence (MI) function in corporate decisions: Case opinion mining of nuclear power". It is an in-depth case study about the monitoring of technology sentiment based on business environment scanning. Results show how media sentiment towards nuclear power has been mostly negative, particularly in social media. However, results from similar analyses of the image for the companies currently deploying these technology are less negative, suggesting the importance of companies' communication and branding activities. The paper shows how technology's media sentiment can influence a company's brand image and marketing communications. It concludes that there is a need for better co-operation between different corporate functions, namely technology management, MI, and marketing and strategic planning.

The second paper, by Bleoju and Capatina, entitled "Enhancing competitive response to market challenges with a Strategic Intelligence maturity model" shows a way to gain robustness in confronting unexpected events in real markets by adopting a wider unstructured learning perspective with the help of maturity assessment tools. This helps to pool strategic intelligence skills. The theoretical contribution is called the Strategic Intelligence Capability Maturity Model.

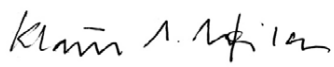
The article by Solberg Söilen is entitled "How managers stay informed about the surrounding world". It's a survey of managers and knowledge workers to find out exactly what sources of information they gather to help their organization stay competitive. Conclusions from the data are drawn and a model presented that brings together previous theory with new empirical findings.

The first issue of 2019 was delayed primarily due to the journal's involvement as co-sponsor of the ICI Conference in Luxembourg in May.

As always, we would above all like to thank the authors for their contributions to this issue of JISIB. Thanks to Dr. Allison Perrigo for reviewing English grammar and helping with layout design for all articles and to the Swedish Research Council for continuous financial support. We hope to see as many as possible at the ICI Conference in Bad Nauheim in May, 2020.

On behalf of the Editorial Board,

Sincerely Yours,



Prof. Dr. Klaus Solberg Søilen
Halmstad University, Sweden
Editor-in-chief

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Exploring new ways to utilise the market intelligence (MI) function in corporate decisions: Case opinion mining of nuclear power

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ABSTRACT The challenge in today's corporations is that even though the technology portfolio of a company plays a crucial role in delivering revenue—falling as a topic mainly under the area of technology management—technology may have a negative image due to observed risks or failing the sustainability criteria. It may influence the company's image and brand image, possibly also influencing decisions at corporate level. The monitoring of technology sentiments is therefore emphasized, benefiting from the advanced methods for business environment scanning, namely market and competitor intelligence functions. This paper utilizes a new big data based method, mostly utilized in market(MI)/competitor intelligence(CI) functions of the company, opinion mining, to analyse the global media sentiment of nuclear power and projects deploying the technology. With this approach, it is easier to understand the linkage to corporate images of companies deploying the technology and also related corporate decisions, mainly done in the areas of technology market deployment, marketing and strategic planning. The results indicate how the media sentiment towards nuclear power has been mostly negative globally, particularly in social media. In addition, results from similar analyses from a single company's images for the companies currently deploying the technology are seemingly less negative, indicating the influence of company's communication and branding activities. This paper has implications showing that a technology's media sentiment can influence a company's brand image, marketing communications and the need for actions when technology is deployed. In conclusion, there seems to be a need for better co-operation between different corporate functions, namely technology management, MI, marketing and strategic planning, in order to indicate technology image impacts and also counteract firestorms from social media.

KEYWORDS Company media analysis, editorial media, learning machine, market intelligence, media-analysis, nuclear power, opinion mining, social media, web intelligence

1. INTRODUCTION

New applications based on web intelligence, digitalization and social media analytics are currently being studied in different research branches. Competitive and technological intelligence (CTI) tools are used in companies and research organizations to get the best efficiency out of a market monitoring process, and when these tools develop, more and more companies will be looking for monitoring and management of strategic information (Fourati-Jamoussi, F *et al*., 2018). In recent years, social media has increased in importance for social networking and content sharing, and services such as Twitter can be used for various analyses. For example to forecast box-office revenues for movies, based on sentiment and quantity, it can now outperform purely market-

based predictors (Asur, S. & Huberman, B, 2010). In a study by Søilen *et al*., 2017, Twitter was seen as a source of analysis, what information is being tweeted and not tweeted, thus professional users are aware that tweets are being manipulated by communication departments. Twitter has also been considered as a source for detecting disruptive events (Alsaedi *et al*., 2017). Furthermore, many companies utilize social media data for analyses, such as likes, comments, and sentiment by using lexicon-based classification to categorize the sentiment of users' comments (Yulianto, M. *et al*., 2018), like it was in this study.

For a company-wide view, individuals and organisations are now adopting public opinions presented across the media to their corporate decision making (Liu *et al.,* 2012). By adopting these faster than before, almost in real time, feedback from media sentiment to a change of a company's product can influence decision-making processes of the company. Media activities generated by consumers that are neither paid or induced by brand owners are seen to have a potentially game-changing impact on communication and brand building (Corstjens, M. & Umblijs, A. 2012). What if the large quantity of negative information about a company's product would flow suddenly by word of mouth (WOM) from social media (SoMe)? In reaction to any questionable statement or activity, social media users can create large waves of outrage rapidly, and these online firestorms pose new challenges also for marketing communications (Pfeffer *et al*, 2014). Social media monitoring can be efficiently dealt with via a company's market intelligence (MI) function.

To highlight case-specific features of this paper, when nuclear power generation technologies are concerned in the combat against climate change, nuclear power can be considered to be one possible mitigation strategy, due to the extremely low carbon dioxide emissions during the energy resource's life-cycle (Dones *et al*., 2003). If carbon emissions are reduced also in developing economies, alternative energy sources in the form of green technologies should be deployed as substitutes for coal and petroleum (Ganda, 2018). The public perception of nuclear power is however an essential factor influencing whether the technology is used for producing electricity (Goodfellow *et al*., 2011). By relying on nuclear power, a country could be virtually independent from foreign energy sources, and thus gain energy supply security. For example, should fossil fuel reserves become insufficient, other cheap energy sources would be needed to fill the gap (Roth *et al*., 2009). Hence, the supporters of nuclear power currently apply two main arguments, firstly nuclear power can secure the fulfilment of our energy demands, and secondly, it is CO_2 neutral, and would therefore be an effective mitigation strategy against climate change (Bang, 2010). Nuclear energy falls short on sustainability criteria and its public acceptance can be an issue (Verbruggen, 2008). Nuclear technologies, despite their enhanced safety, reduced costs and minimised waste, still include the burden of the weapons proliferation, safety, waste handling and high costs. Furthermore, concerns have not been reduced due to the recent Fukushima accident (Karakosta *et al*., 2013). Several countries are currently facing the question of whether or not to rebuild their nuclear power stations in the next few decades, while policy makers are consulting the public regarding its opinion of nuclear power (Visschers *et al*., 2011). Based on literature, the technology itself seems to have a negative image, which is an issue to solve for companies developing nuclear projects.

There is an increasing need for studies to better understand the dynamics of the media sentiment, including also SoMe, which can be used for analysing public attitudes with the help of opinion mining, based on artificial learning machine media monitoring systems, by a company's MI function. Compared to traditional news media, which can shape public opinion regarding an issue by emphasising some elements of the broader controversy over others (Shah, Watts, Domke & Fan, 2002), SoMe presents more direct opinions, often including emotional content (Stieglitz and Dang-Xuan, 2013). This study analyses the global media sentiment of nuclear power from both editorial and social media by using the M-Adaptive tool for media monitoring, thus comparing the differences at company level. This research aims to fill the gap related to technology sentiment impact at a strategic level of the company with related research method development, namely based on big data utilization with computational linguistics and machine learning, to discover the sentiments from large data sets.

2. LITERATURE REVIEW

The general public is a stakeholder, although this can be overlooked in stakeholder

management (Mitchell *et al*., 1997). Although nuclear power and renewable power are considered to be the main existing technology options for near zero emission power production, their main difference is sustainability and acceptability. Renewable power is considered to be sustainable, nuclear is not, and the public acceptance of nuclear power is also rather low (Verbruggen., 2008). There are indications that people's acceptance of nuclear power may be influenced by the available alternatives, and previous nuclear accidents have increased the public's opposition towards nuclear power (Siegrist *et al*., 2013). When comparing people's perception of nuclear power to climate change, it shows that if people are presented with the benefit of nuclear power to mitigate climate change and are asked to choose between nuclear power stations or climate change, cautious preference or "reluctant acceptance" to nuclear power stations and related waste may arise over the consequences of climate change (Pidgeon *et al*., 2008). However, the increase in adoption of renewable power systems can be considered as a decreasing factor for this when providing alternatives. There have been studies examining the willingness to take actions against or in favor of nuclear power stations, with logical implication that the perception of nuclear risks seems to reduce the public's acceptance or their preference for nuclear power (Tanaka, 2004). This has also increased people's willingness for opposition (de Groot and Steg, 2010), whereas more perceived benefits increased the acceptance of nuclear power (Tanaka, 2004).

The recent Fukushima Daiichi nuclear power plant accident in Japan on March 11, 2011 influenced the acceptance of nuclear power globally (Siegrist *et al*., 2013). Research about the Chernobyl accident in the eighties shows that such accidents may influence the formation of more negative attitudes towards nuclear power (Eiser *et al*., 1990; Verplanken, 1989). For example, in Germany, attempts to locate a permanent nuclear waste repository and "the resistance of the German people towards nuclear weapons and atomic energy" provoked an aggressive anti-nuclear movement. The movement's influence particularly heightened after the Chernobyl accident, especially in Southern Germany and Bavaria which were affected by the fallout (Sovacool *et al*., 2012). The more recent Fukushima accident also had a clearly negative impact on the acceptance of nuclear power, however the mean change was considered moderate and was strongly influenced by participants' pre-Fukushima attitudes (Siegrist *et al.,* 2013). In general, media reporting about nuclear accidents does not increase knowledge and understanding of radiation risks, but rather increases negative feelings and risk perception (Perko *et al*., 2012).

According to Keller *et al.* (2012), particularly affective images seem to affect people's acceptance of nuclear power. Therefore, people who earlier may have opposed the replacement of nuclear power plants may change their opinion when associating nuclear power with images such as radioactivity, nuclear accidents, risks and negative consequences for health and the environment, or even nuclear war (Siegrist *et al*., 2013). There are studies showing that those people who trust authoritative institutions such as the government are usually more supportive for nuclear technologies. It is shown that renewable technologies may not be as liked as nuclear technologies are disliked (Sovacool, *et al*., 2012). The concepts of risk and dread can be more often expressed reasonably by people who are opposing the replacement of nuclear power plants than by those who are in favour (Siegrist *et al.,* 2013).

Different content analysis methods can be considered to study a technology image, such as media framing (Teräväinen *et al*., 2011). However, these were not applied in this study. Previously, media frames were used together with cluster analysis and automated sentiment classification by Bursher *et al*, 2015. Also, few studies compare people's acceptance of nuclear power to that of other energy sources (Ansolabehere and Konisky, 2009). From this, it seems that people who supported the replacement of nuclear power often associated nuclear power plants with neutral and positive concepts such as energy, and to a smaller extent, with necessity (Siegrist *et al*., 2013).

Furthermore, many discursive strategies can be considered when communicating nuclear power technologies, such as necessitation, naturalisation, scientification and rationalisation (Teräväinen *et al*., 2011). This study introduces a new method for both editorial and SoMe analysis: an opinion mining approach based on a machine leaning media-analysis to provide a wider view.

3. RESEARCH METHODS

The research methodology in this paper is based on a literature study accompanied by opinion mining based on media sentiment analysis including a vast number of editorial and social media sources, with a lexicon-based approach. Thus, the basic research principles have been formerly used in different fields of studies, for example in competitor and market intelligence studies. In this study, however, the application of framing and cluster analysis was considered to be non-applicable, in addition to statistical methods. This is due to a comparison of editorial content with SoMe, and to the fact that media frame comparability between two different types of communication is challenging. Furthermore, it was also challenging to find suitable statistical method for data-series analysis.

The main reasons for choosing this method was applicability to large global datasets, both from editorial content and SoMe, fast data processing and reduced risk of bias caused by human perceptions and interpretations (Matthes & Kohring, 2008). The data for this study is taken for one year, included in the period was a major international climate conference, Paris COP21.

The users of the social web have a new role as data providers, as it seems to provide an excellent platform for analysing public attitudes (Penalver-Martinez *et al.,* 2014). By adopting this type of approach and a particular tool, the amount of analysed datapoints is drastically increased compared to questionnaires and interviews, or traditional media-analyses. Despite the IPR-protected algorithm, which is not visible, the method is not entirely a black box, it is rather a grey box. For this reason, software was tested in a master's thesis (Nuortimo, 2015) comparing it to traditional media analysis methods and the logic of how the sentiment is calculated is known, as sentiment is mathematically calculated as a sum from local document sentiments. Futher, software is learned by humans for better accuracy. In computational linguistics, due to the complexity of the algorithms, they are usually evaluated on the basis of testing and comparison, as was done by Chen, 2018.

The data was analyzed to obtain a clear view of nuclear power technology sentiment and to discuss further implications to companies. Hence, the research setting in this article is the media-sentiment analysis, where media sentiment is analysed to discover possible implications to public acceptance. As a result, we attempt to clarify the link to technology market deployment and corporate decisions.

This method is based on commercial software in order to discover the sentiment relating to nuclear power, similar to the method applied by Burscher *et al,* 2015. Opinion mining is a research field, which consists of natural language processing, computational linguistics and text analysis technologies, in order to get various informational and added-value elements from users' opinions (Penalver-Martinez *et al.,* 2014).

The approach used in this paper, where an algorithm calculates the global document sentiment based on the quantity of local sentiments, seems to be a valid approach despite known errors (app. 20% of classifications). Furthermore, human analysis of text information is subject to considerable biases, such as emphasising the importance of opinions matching with their own preferences (Liu *et al.,* 2012).

In this paper, the media sentiment of nuclear power both in editorial and SoMe is studied. The M-Adaptive software is used, which includes 3 million SoMe platforms and 100,000 news outlets. The sentiment is analysed as a combination of computational linguistics and human aided machine learning (M-Brain). The method is a more quantitative type of analysis compared to traditional qualitative methods such as surveys. In the software, the keywords "nuclear power" were used as input. The analysis was made over one year 2.7.2015-2.7-2016, and included a total of 41,591 data points from both editorial publications (14,482) and SoMe sources (27,109). The study can be replicated by typing the same search words into the M-Adaptive software.

The sentiment expressions in the text are recognised and then classified automatically by type:positive, negative, neutral, mixed or unknown. M-Brain has made some internal tests, which indicate app. 80 % accuracy in sentiment classification. The error occurs in case of any given individual document, due to inherent ambiguity in natural language. It is also known that humans do not agree 100% in similar cases. As a limitation, the system does not recognise humour or sarcasm. However, in large data sets, the overall model matches human judgement on the same data qualitatively.

4. MEDIA SENTIMENT OF NUCLEAR POWER TECHNOLOGY

In the machine-based analysis, the large amount of data points gained from media hits provides a good basis for analysing the media sentiment, especially in terms of regular people on SoMe. In Figure 1, the sentiments towards nuclear power are described both from editorial publications, and SoMe.

The results indicate that nuclear power is linked to negative hits both in editorial publications (8,976) and SoMe (11,458). There were 3,737 positive hits in the editorial content and 5,183 in SoMe, which is fairly low compared to the total hits. The neutral hits accounted for 726 in the editorial content and 9,899 in SoMe. Mixed hits accounted for 1,043 hits in the editorial content and 569 hits in SoMe. This seems to indicate that the press has adopted a negative tone towards nuclear power during the time period in question.

Figure 2 describes the 62% of negative hits in editorial content. Only 26% of hits in editorial publications were positive, indicating a relatively low technology acceptance among journalists, and also an absence of the journalistic type of discussion and rhetoric which would include multiple views. The amount of mixed (7%) and neutral (5%) hits is quite small.

Figure 3 describes the public sentiment towards nuclear power in SoMe as negative (42%). This was somewhat different compared to editorial publications, with a slightly less negative share. Figure 3 indicates that public sentiment toward nuclear power in SoMe is also more neutral (37%) with a 32% difference compared to editorial publications. This can be seen as an indication that the press has adopted more negative discourse than individuals on SoMe.

Figure 4 indicates that Twitter provided the most SoMe data, with almost eighteen thousand hits. These were mostly neutral (9,231) or negative (5,425), with fewer positive (3,185) and mixed (44) hits. This can be observed as a negative data concentration. Blogs had 4,288 negative hits, 1,253 positive, 411 mixed and 226 neutral. In comparison with Tumblr (238), Google Plus (1,345), Facebook (471) YouTube (404), VKontakte (45), Instagram (109) and Forums (434), Twitter (17,885) was the most influential SoMe source.

Figure 5 shows that media sentiment has followed roughly new nuclear building in the selected countries. Finland is building the Olkiluoto 3 unit and also the Hanhikivi plant

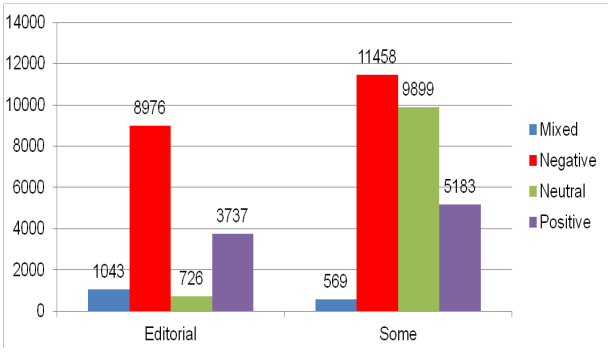

Figure 1 Sentiment analysis of nuclear power in SoMe vs. editorial publication.

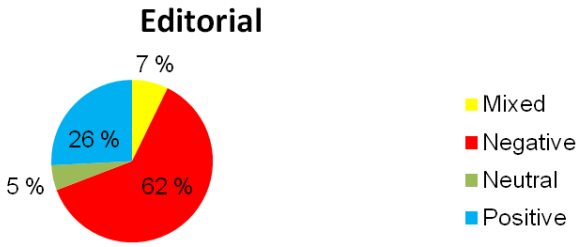

Figure 2 Sentiment analysis of nuclear power in editorial publications.

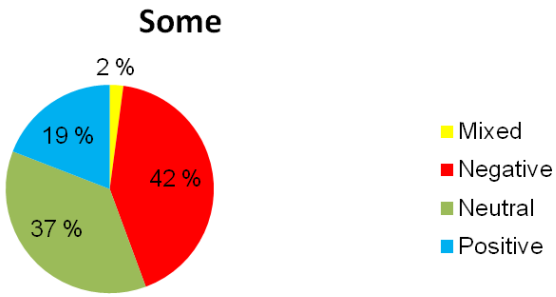

Figure 3 Sentiment about nuclear power in Social Media.

by Fennovoima (subject to building permits), and the country clearly has less negative sentiments both in editorial content and in SoMe. Japan, after the Fukushima accident, experienced more negative attitudes. France, China and Russia are all major countries with nuclear capacities. They fall in the middle of the spectrum. Britain, now with Hinkley Point considerations, interestingly has a more negative tone compared to Germany, which has a significant nuclear decommissioning program and large renewables capacity. It may be an indication that the supply security issue might rise in importance. India has the largest difference between opinions from editorial content and SoMe, where sentiment in SoMe is interestingly 23% less negative.

Figure 6 illustrates the effect of the global Paris COP climate negotiations on the nuclear power media image in editorial publications

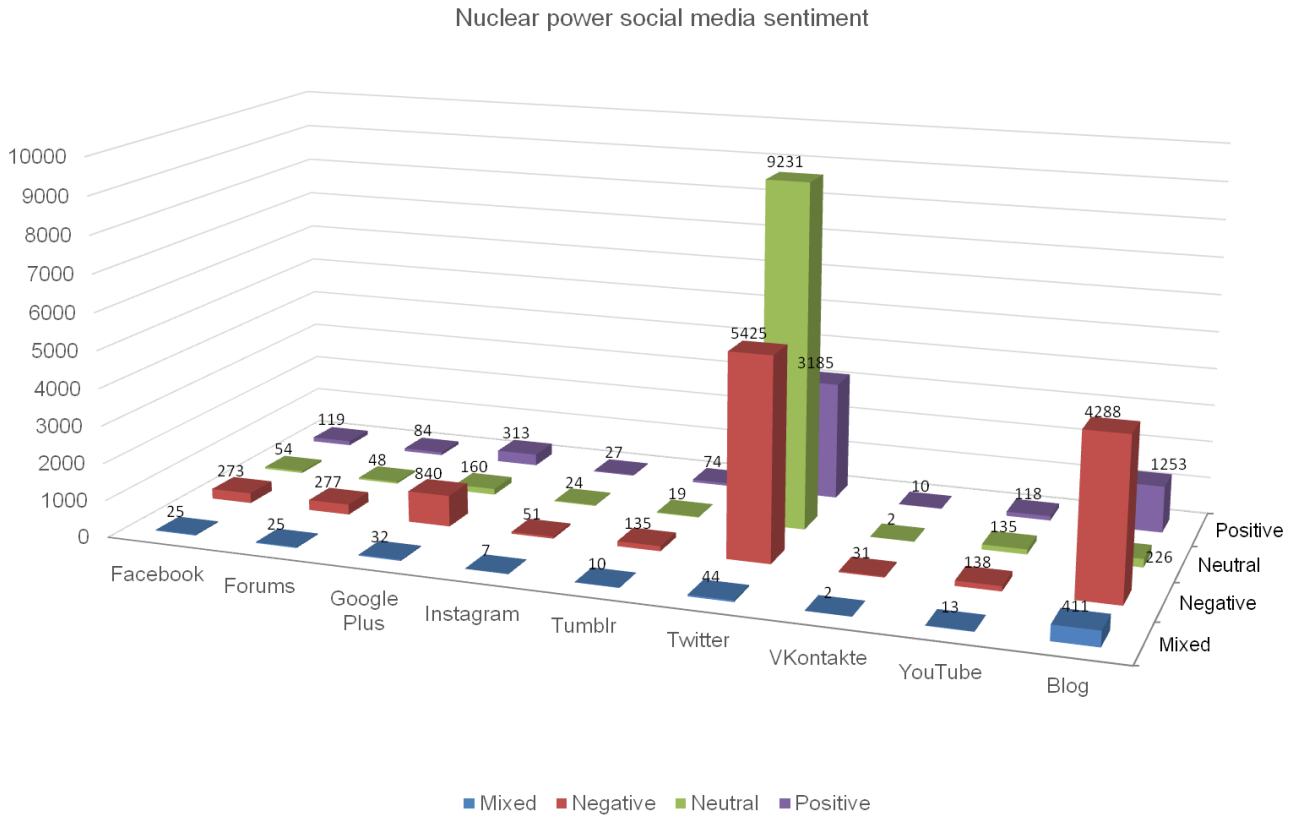

Figure 4 Deviation of social media sentiment analysed by media type.

and in SoMe. The preliminary conclusion that can be drawn from this entails that nuclear power technology is not seen as a solution that is considered for addressing climate change, and thus media-attention towards nuclear power technologies is mostly negative.

From the general data analysis it is visible that public sentiment towards nuclear power in both SoMe and editorial publications was mostly negative, similar to the results of the literature review.

However, when moving from a global level to country level, there exists some variations in media sentiment, depending on each country's political situation and also new nuclear building in the country. Two countries with ongoing nuclear developments, namely Finland and UK, were selected. On a country level, Finland clearly had the lowest negative editorial media sentiment of the selected countries, and also the second lowest percentage in SoMe after Germany. This

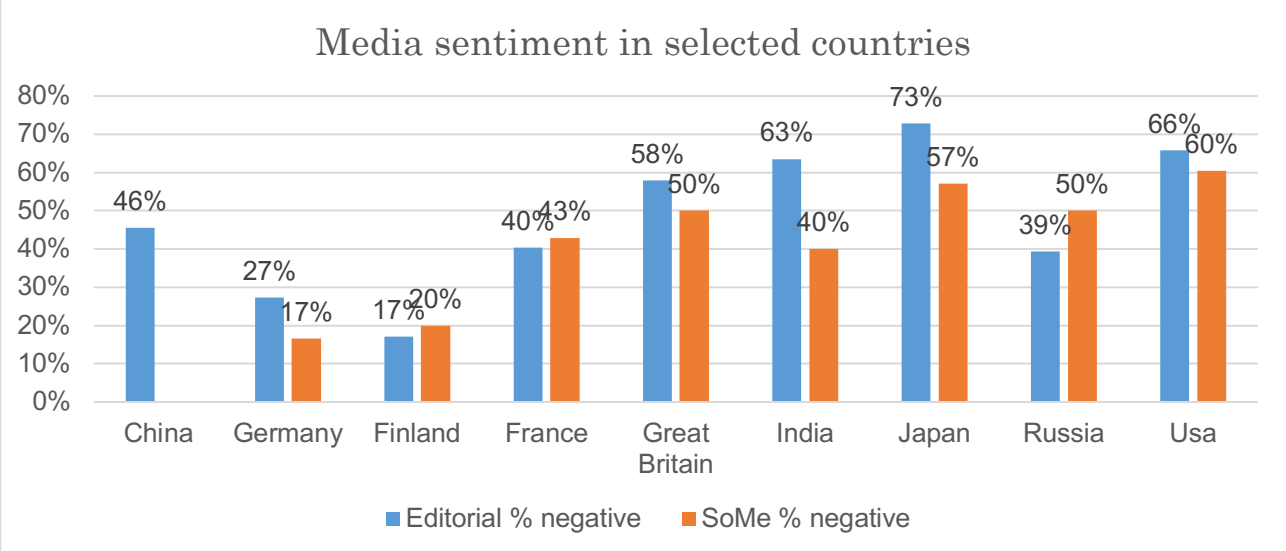

Figure 5 Media sentiment on nuclear power in selected countries.

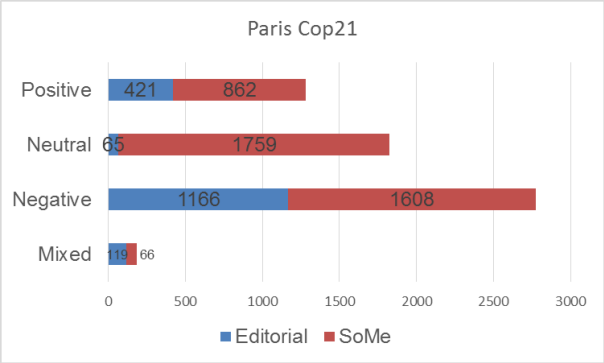

Figure 7 Media emphasis on nuclear power during the global Paris COP climate negotiations.

indicates a more positive tone towards nuclear power in Finland.

Project media sentiment over a half year (1.12.2016-25.5.2017) was observed in the case of two projects, namely Fennovoima in Finland and Hinkley Point C in the UK, both of which are in early construction phases of development. Figure 7 illustrates the sentiments towards Fennovoima, a project company established to build a Hanhikivi nuclear reactor in Finland.

From Figure 8 it is visible that Fennovoima has attracted mostly neutral and also positive attention both in editorial content and in SoMe. This indicates the general positive attitude in Finland, visible in the country analysis, and may indicate also the presence of PR-activities by the company.

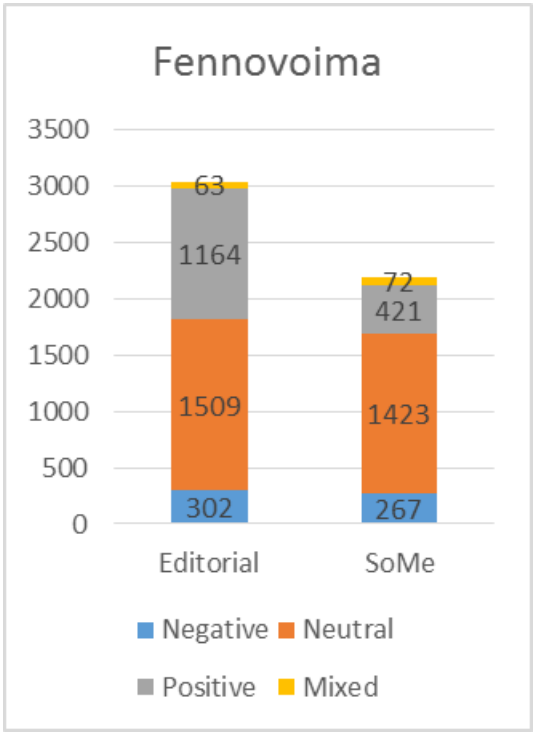

Figure 6 Media sentiment towards Fennovoima.

When looking more closely to the media source in the case of Fennovoima it can be observed that the mostly positive editorial media attention has had some response from Twitter, which is more negative, possibly indicating the presence of local opposition groups. Compared to the editorial media, which is clearly more positive, this indicates

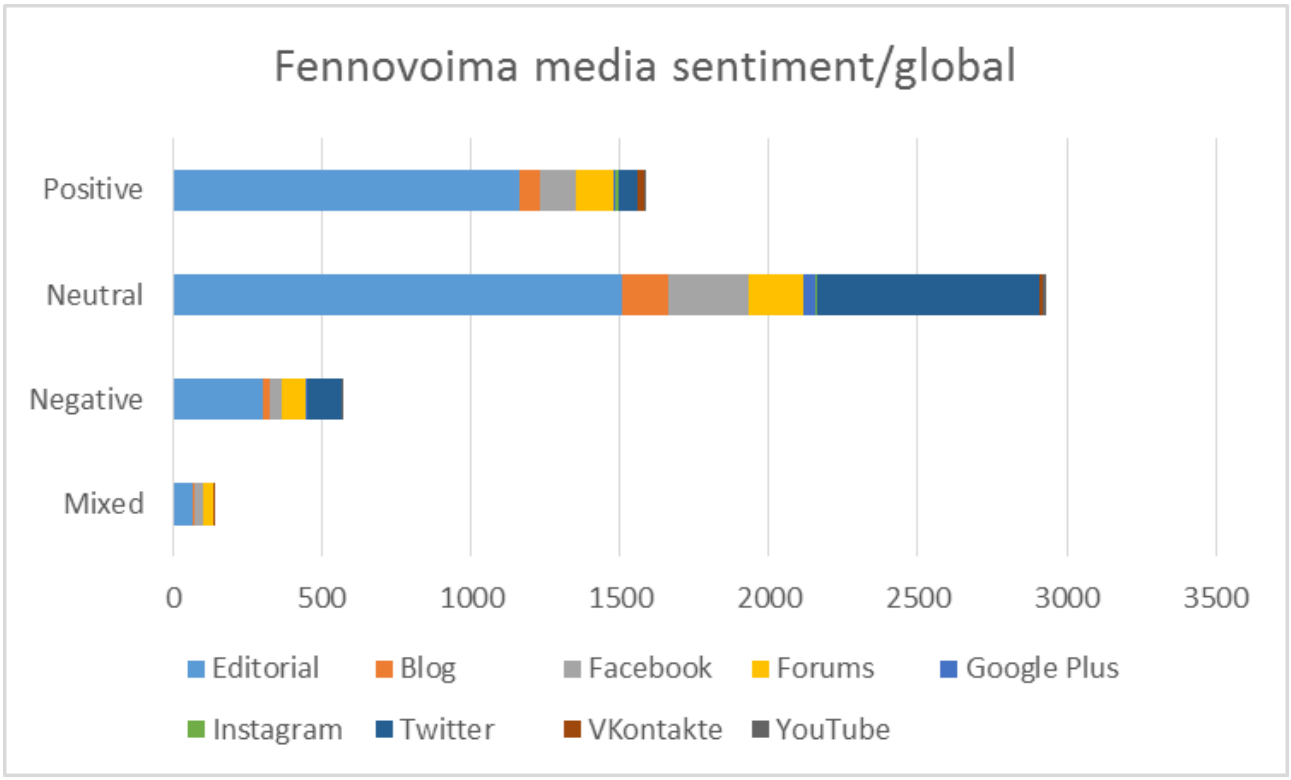

Figure 8 Media sentiment towards Fennovoima/by source.

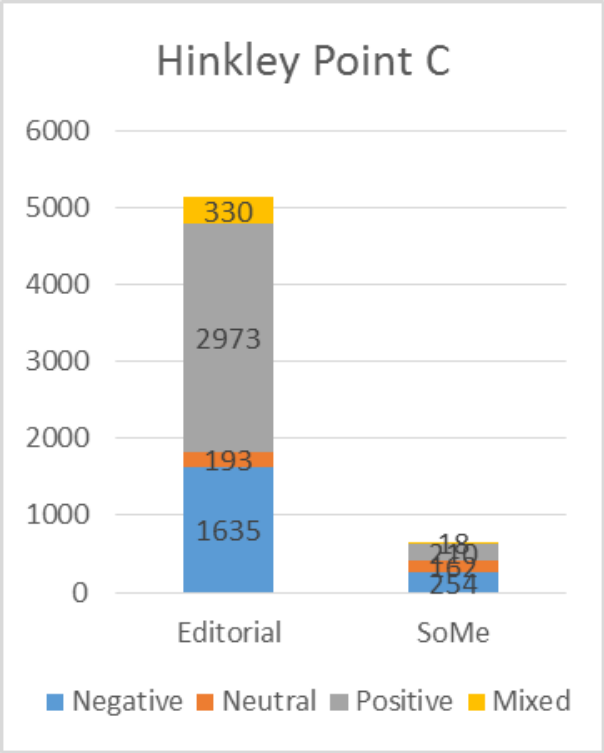

Figure 9 Media sentiment in Hinkley Point C.

that SoMe channels can be used as means for communicating local opposition in the case of large onshore projects.

The media attention for the Hinkley Point C project in the UK (Figure 9) seems to follow the general consensus of the country with its more negative attitude. However opinion towards nuclear power is still mainly positive in the editorial media, but mostly negative in SoMe with app. ten times less hits than in editorial media.

Figure 9 describes the sentiment towards Hinkley Point C according to editorial media and SoMe, with an clear indication that the editorial media emphasized both positive and negative communication. The general sentiment is positive. However, the percentage of negative sentiments is slightly higher in SoMe (Figure 10).

When summarizing the media sentiment of nuclear power (Figure 11), it can be observed that although globally the sentiment in the editorial media (62%) and in SoMe (42%) is negative, there are differences on a country level. For example, countries with less negative sentiments compared to the global average, such as Finland and the UK, also have active nuclear projects in the country, and those projects also have a less negative media image than nuclear power does on the country level. There is slightly higher percentage share of negative SoMe sentiment for a single project. However, on a project level, the media attention is less negative both in the editorial media and in SoMe than at the global and country level, possibly indicating that with positive project investment decision, there is supporting communication from the project company. For these countries with nuclear

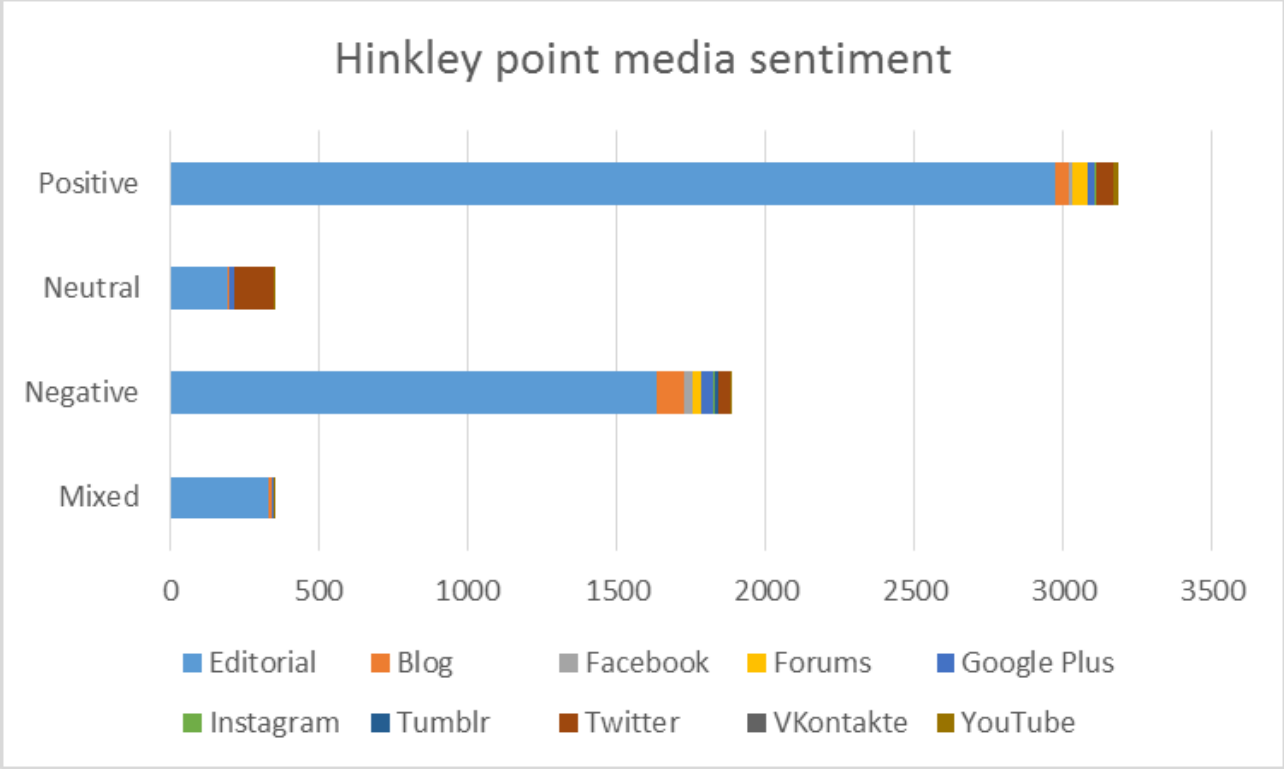

Figure 10 Media sentiment towards Hinkley Point C, Editorial/SoMe.

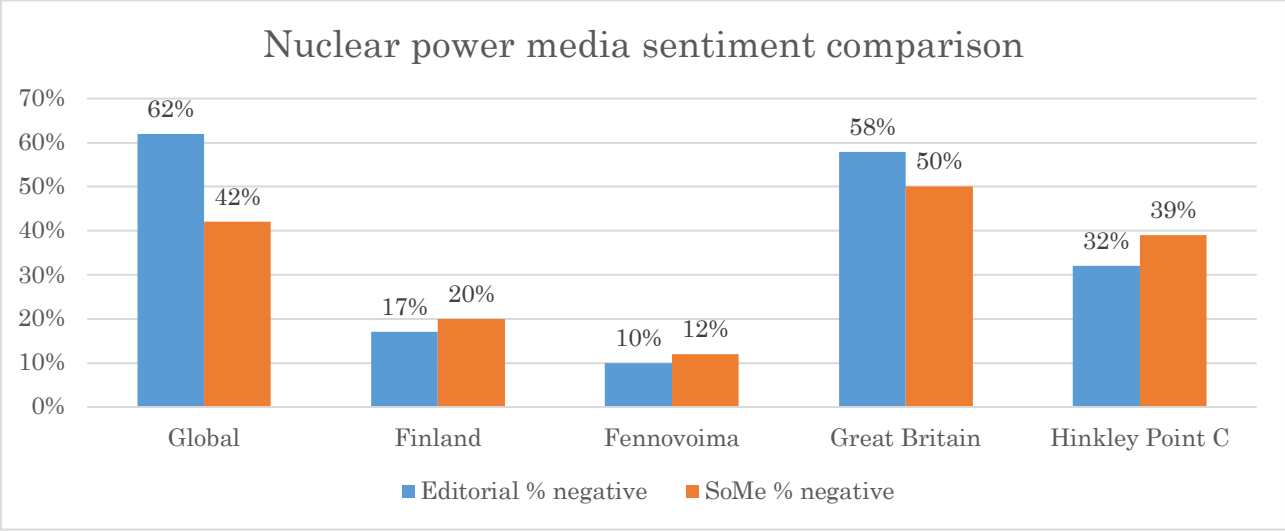

Figure 11 The comparison of nuclear power negative sentiments at global, country and project levels.

capacity, it is not comparable to country sentiment.

Figure 11 shows that globally the sentiment about nuclear power in the editorial media (62%) and in SoMe(42%) is clearly negative, there exist differences on country and project level. Finland and the UK have less negative sentiments compared to the global average, and nuclear projects also have a less negative media image than nuclear power on the country level. Thus there is slightly larger percentage share of negative SoMe sentiment for single projects (Finland/Fennovoima (2%) and UK/Hinkley Point C (7%)). On a nuclear project level, the attention is less negative both in editorial media and in SoMe than at the global and country level.

5. DISCUSSION

The global media-analysis was conducted by utilising a key-word based search and M-adaptive media monitoring software. The analysis was made over one year, 2.7.2015-2.7-2016, and included a total of 41,591 data points from both editorial publications (14,482) and social media sources (27,109). Media sentiment of nuclear power was neutral and negative in editorial content and in SoMe, where SoMe sources included more neutral attitudes. Active discussions concerning nuclear power have taken place for example on Twitter, with almost eighteen thousand mostly neutral and negative hits, emphasising the importance of short communication via social media. The analysis points out that the general publics' opinion can be an important factor for technology acceptance and a company's brand image. Good examples of this correlation include Finland's positive attitudes and new building projects, and Japan's negative media sentiment as a response to the recent nuclear accident and nuclear decommissioning program. When considering the effect of relevant international events such as the Paris COP 21, the media attention is increased during the event. In this case the attitude shift towards nuclear power was mostly negative.

The main benefits of the results lie in figuring out global trends and technology development directions by using a larger data set than previous studies, and fast analysis of possible changes influencing decisions on a corporate level. The role of SoMe is continuously increasing and it presents a challenge for technology developers and corporate strategists. It seems that a negative link between media sentiment of technology to technology market deployment exists in the case of nuclear power, needing actions on the company and project levels, such as communication, branding and PR.

The main contribution of this study lies in incorporating a method of competitor/market intelligence functions to study the media sentiment of nuclear power, therefore bringing a new angle to corporate decisions. This is a new type of approach compared to earlier questionnaire, or interview-based studies with moderate datasets of hundreds of data points that are used in most similar studies, e.g Heras-Saizarbitoria *et al.*, (2011). This method has positives and negatives when compared to qualitative studies. However, in the future this type of method could be used as a basis for both longitudinal data-series analyses, and also for SoMe firestorm detection.

The ability of the software does set some limitations on the extent of possible time periods to be analysed, yet still allows for

analysis of extensive data sets. The sentiment analysis indicates that large emotional bursts relate to SoMe firestorms, thus sentiment is calculated and the number of negative bursts is clearly visible in the data-series trend analysis. This study agrees with Stieglitz and Dang-Xua's (2013) view, that emotionally charged social media messages are repeated more often and quickly than neutral ones. This view could be used as a basis for an automated social media firestorm detector, in which the application would give signals if there are signs of large negative sentiment rising in SoMe together with escalation in speed estimates and a corporate action plan.

Managers can benefit from the possibility of analysing global attitudes and their changes, for example for their companies or projects, highlighting the needs for public engagement and the urgency of SoMe participation.

In this study, there are the following limitations:

1) The results are dependent on the keywords used.
2) Content analysis methods, such as framing and cluster analysis, were not applied.
3) Statistical methods were not applied. Although statistical techniques are applied by communication scholars in order to identify news frames, it is not possible to do this in a conceptually valid manner (Carragee & Roefs, 2004). This also brings challenge for further research.
4) No detailed content analysis was possible due to a very large dataset, leaving the classification errors depending mostly on accuracy provided by the software supplier.

6. CONCLUSIONS

This study shows how a company's MI function can be utilized in defining product technology sentiment, which in the case of nuclear power technology has a neutral and negative public sentiment. This is further emphasised during large national climate congresses such as the Paris COP21. Companies deploying nuclear power projects suffer from a negative media sentiment, which is clearly visible via social media. This is in contrast to renewable power technologies (Nuortimo, 2018). Factors that favour nuclear power market deployment include its availability and CO_2-emissions.

The media-analysis indicates that on a global level sentiment towards nuclear power is negative, but in the case of individual projects there is a more positive sentiment, probably due to the project company's communications and branding efforts. SoMe especially has a role in influencing nuclear power technology's media sentiment, which can be considered when planning marketing and PR for a single company. Thus, when facing negative sentiment towards the company's main technology, there seems to be constant need for a positive brand messaging. This paper also indicates the need for cooperation between a company's MI function and marketing, in order to detect and counteract possible firestorms arising from SoMe.

The link from technology's media sentiment at the corporate level exists in the case of nuclear power, with implications to managerial decisions. How can a company monitor media efficiently and distribute this information between different functions? What is the result, does the general public like the technology, and if not, what can be done with this information? A company could divest the technology or increase PR-activities, among other actions. The implications for company strategy also include the emphasis on product portfolio management and co-operation between different functions, including MI, technology management and marketing/PR. This view includes taking advantage of digitalization to refine the product portfolio of the company and better link to the MI function, thus the company's product strategy is refined to better account for changes in the external market environment, and to highlight the need for supporting PR, communications and public engagement activities.

Our main finding is that the technology related sentiment of a company's products may impact corporations on a strategic level, and media monitoring systems from a company's market intelligence function based on big data utilization with computational linquistics and machine learning can be utilized to detect this. Further research for deeper data-analysis could have interesting results. Company-wide implications and co-operation between functions, such as strategic planning, market intelligence, communications and marketing, could be an extensive area for further research. Finally, algorithms cannot entirely replace human intelligence yet, however, they do provide significant advantages in quantity and objectivity to aid in various tasks.

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Enhancing competitive response to market challenges with a strategic intelligence maturity model

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ABSTRACT Tracking meaningful insights about companies' exposures to high risk of failure in competitive markets, intelligence studies in business should listen to practitioners' signals and act in providing decision making support to systematic scanning for valuable information. In order to gain robustness in confronting unexpected events in real markets, companies should adopt an unstructured learning perspective with maturity assessment tools, while purposely pooling strategic intelligence (SI) skills. By bridging organizational maturity modeling with a future orientation stream of literature and intelligence studies in business, this conceptual research aims to highlight a genuine Strategic Intelligence Capability Maturity Model (SI CMM), capable of purposely addressing the challenge of aligning detective and anticipatory organizational capabilities. The conceptual model highlights the degree of preparedness of four SI profiles behaviors (intelligence provider, vigilant learner, opportunity captor and opportunity defender – previously developed by the authors) against seven levels of maturity. The SI CMM framework outlines both conditioned scanning capabilities (the first five SI readiness levels) and enablers to anticipate future market trends (the last two SI readiness levels). The novel approach of the strategic intelligence readiness framework supplies companies with a valuable organizational learning tool to close the skills gap through an opportunity provider profile. The main features lie in coordination and sharing SI common knowledge to enhance preparedness in forward-looking competitive pressures. The conceptual framework invites academia and the community of intelligence experts in business to evaluate the relevance of the new conceptualization, clarity of constructs and complementary nature of correlation and causation with the proposed SI CMM model.

KEYWORDS Capability maturity model, intelligence provider, opportunity captor, opportunity defender, strategic intelligence, vigilant learner

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"If we are blinded by darkness,
we are also blinded by light"

Annie Dillard

1. INTRODUCTION

In the context of unpredictable changes, which have a huge impact on firms' competitiveness, providing managerial tools to assess organizational preparedness for the future becomes compulsory. The performance gaps registered between competitors are due to the different degree of organizational preparedness to anticipate and react to future market trends.

Managerial proficiency in understanding and addressing market challenges lies with scanning for relevant information, reacting to ambiguity, developing peripheral vision and overcoming cognitive bias in weak signal

interpretation. In order to enhance future organizational preparedness, core organizational skills to embed knowledge need to be addressed and responses need to be provided, confronting the demand of decision-makers for strategic intelligence (SI) training with developing anticipative capability.

The changing patterns of competition and its impact over the organizational capabilities' alignment continue to be a challenge for scholars and practitioners in business and management. In order to deal with increasing complexity and volatility of the competitive landscape, organizations should inquire about the knowledge and skills they must develop for the managerial future orientation. Current patterns of strategic behaviour are still dominated by standardized or specific models and tools which are foreseeable to deter gain from innovation and change in future markets. Therefore, strategic intelligence core skills should be trained to support management decisions in providing adjustable learning tools to successfully leverage dynamic capabilities of the firms.

In order to provide anticipative managerial training, a strategic intelligence framework to assess the degree of organizational preparedness is hosting a learning approach to SI maturity with:

- **conceptual training:** knowledge acquisition oriented, to match SI missing skills;
- **interpretative and iterative:** expected proficiency in knowledge sharing; knowledge transfer oriented of core SI skills; actionability trough collective learning experimentation;
- **future oriented behavior training:** knowledge capitalization oriented to enhance competitive identity of SI performers; influencing the future competitive environment; developing a SI supportive culture.

The Strategic Intelligence Capability Maturity Model (SI CMM) articulates actionable organizational knowledge and provides guidelines for managerial practice to share SI practices about future competitive pressure anticipation in order to identify the specific SI core skills that need to be improved. The value added of the SI CMM resides on an interrelated body of knowledge of strategic intelligence and competitive behavior, valorizes our up-to-date benchmarking insights over the key topics on organizational alignment capabilities to environment turbulence and underlines knowledge discovery vocation as a SI unique feature to influence organizational intelligence maturity.

In the following sections, the main approaches and outcomes in the field of intervention, conceptualization, constructed experimentation and adjusting within the multi-framing approach of strategic intelligence profiling are exposed, as well as the methodological matching.

2. THEORETICAL BACKGROUND

The value of intelligence in influencing managerial thinking builds upon business practice reports about the lack of perspectives on strategic intelligence capability importance to assist decision-makers with scenarios of aligning intelligence agendas with the anticipation of competitive pressures (Gilad, 2011).

Developing the capability to design interpretive frameworks is particularly important, while managerial strategic decision has to anticipate future competitive pressures with unanalyzable environments. A conceptual model of collective creation of meaning emphasizes the principles of puzzle method and provides an anticipative scanning process (anticipative strategic scanning and collective intelligence) to enrich the literature and business collection of cases (Lesca and Lesca, 2011).

Qualified foresight capability is approached with a future orientation stream of literature and intelligence studies in business to enhance managerial relevance of various business toolkits to confront competitive environment complexity and volatility.

Intelligence studies in business highlights the importance of designing support decision making tools to share practitioners' concerns about interpreting relevant information regarding the external environment, affecting strategic positioning. Intelligence analysis toolsets, cross-disciplinary studies, foresight and industry-specific case studies are listed as uncovered areas of interest among respondents' perceptions. The definition of CI studies in business continues to track confusion with implications in formulating precise responses to practitioners' needs. Intelligence studies in business should focus on the content of managerial training to enhance their knowledge about relevant external influences, through ethically gathering

actionable information. Moreover, the industry-specific focus deals with the necessity to develop anticipative tools to mitigate failures and crises (Søilen, 2016). Furthermore, intelligence studies should help to articulate need-to-know, strong signals and trends affecting organizational intelligence preparedness. The body of knowledge should be enriched with relevant evidence of various applications confronted to real competitive context, where we expect that learning by doing bridges what we see with what we do not see about the future to generate relevant intelligence training content (Søilen, 2018).

Enhancing competitive responses to market challenges requires managerial proficiency not only in distinguishing between key drivers of success in current markets but to anticipate future changes in complex and volatile environments. Taking leadership to steer organizations in an unstable competitive landscape needs a high level of preparedness in challenges to the current status quo, mainly if successful. The market leader position is under serious threat once ordinary capabilities are misperceived as extraordinary, as the risk of non-replicating the business success is very high. New challenges arise from ambiguity and volatility, influencing leadership to change the current business model; therefore, developing new dynamic capabilities emerges. An insightful approach organizes dynamic capabilities around three pillars: sensing change, seizing opportunities and transforming the business model, which are considered critical in enhancing competitive response within volatile, uncertain, complex and ambiguous future environments. Proactively upgrading key features of the current business model is decisive to ensure the successful organizational fitness to VUCA environments, while reframing strategic leadership on core skills pillars is listed: anticipate, challenge, interpret, decide, align and learn. The real challenge for organizational preparedness is to reinvent the business model through purposely combining sensing, seizing and transformation to comply with unforeseeable consequences. (Shoemaker et al., 2018).

Competitive positioning relies upon an organizational learning approach of interpreting the environment with test makers actively searching for information and test avoiders with passively interpreting information within limits. Four categories of interpreting behavior are considered: enacting and discovering labels intrusive organizations, while conditioned viewing and undirected viewing labels non-intrusive organizations (Daft and Weick, 1984). Intelligence studies in business builds upon the above seminal work and focuses upon an organizational learning approach to improve managerial interpretive skills to cope with the environment.

The foresight maturity model (Rohrbeck, 2010) adapts and develops the three-step model of managerial acting upon weak signals on emerging change: scanning or data gathering, interpretation of the meaning of data and enacting through learning (Daft and Weick, 1984).

The future orientation stream of literature provides useful insights about measuring corporate foresight, maturity to reach future preparedness status, and labeled vigilant future prepared status at maturity. Valuable insight features continuously perceiving through change sensors, systematically prospecting for anticipating unexpected changes, followed by probing scenarios to shape the rules of competition, as core skills to be developed (Rohrbeck, 2010). The conceptual framework underlines five capability dimensions against which the respondent is assessing the level of organizational future orientation (OFO) readiness: information usage, method sophistication, people and networks, organization and culture. The quantitative benchmark research assessed the level future preparedness with a 300 multinationals longitudinal study, 120 interviews among high and medium management levels, followed by 20 case studies across industries. The study defines an optimum level of future preparedness when its corporate foresight need level is matched by its corporate foresight maturity level, with the results clustering corporate foresight practices with the sample as follows: vigilant (24%), deficiencies (26%) and in danger (50%) (Rohrbeck et al., 2018).

Enhancing competitive response to volatile and uncertain environment challenges requires managerial core skills to understand, interpret and enact upon competitor analysis and market selection. Mapping competitive pressure in different industries gives valuable insights about how to make relevant a current position to future positioning when anticipating change patterns of competition. Each firm will be uniquely affected by its capacity to decide upon markets selection. Therefore, to enhance the competitive

response, reconfiguration with alliances and targeting will be undertaken. Based on common strategic intent, five types of alliances are labelled: surrogate attackers, critical supporters, passive supporters, flank protectors or strategic umbrellas will destabilize and redirect the pressure system (D'Aveni, 2002).

Relying upon measuring the managers' perceptions about competitive dynamics, one significant study informs about limited capability to identify and act upon sensors, once opportunities and threats dominate competitive response decisions. Reflections upon developing organizational capabilities shapes plausible competitive response behavior through an experimental learning approach to align internal and external influences in anticipating early changing patterns of competition in future markets (Fouskas and Drossos, 2010).

Exploring new markets is particularly challenging for capturing opportunities, while previous performance is non-repeatable. To address the concern, a useful response lies with mapping corporate foresight activities to overcome vulnerabilities in coping with uncertainty. Experimenting recipes with multiple iterations of perceiving, prospecting and probing in bottom of the pyramid (BOP) segments finds distant opportunities, crucial for capitalize upon them (Højland and Rohrbeck, 2018).

Differentiation in future markets becomes particularly difficult when it comes to managing innovation-related benefits among partners engaged in coopetition, as they are sharing a common knowledge base.

Seeking offer differentiation colludes with a technological coopetition business model and peculiar concerns arise when analyzing radical innovation vs incremental improvements for individual firms engaged in coopetition. Conflictive objectives derived from the propensity to share vs protect practices to embed relevant knowledge has implications for business model transformation. Return on evidence of a cross-industrial survey in Finnish markets informs about the emergence of a radical business model innovation to preserve the offer differentiation outcome within collaboration among competitors (Ritala and Sainio, 2014).

One recent study proposes a comparative three-level (early stage CI, mid-level CI capability, world-class CI) capability CI maturity model with eight dimensions: strategy and culture, relationship with management, structure, resources, system, deliverables and capabilities, analytical products and CI use, and impact. The comparative model aims at enabling benchmarking across industries and returns on empirical evidence underlines the necessity of a holistic model to track each company's CI practices to reach maturity (Oubric et al., 2018).

Business and intelligence communities are seeking relevant guidance to act upon organizational competitive capital and training should provide external expertise support to focus on defining the scope of a business opportunity (Liebowitz, 2006).

Developing competitive capital lies with selecting facilitators and enablers from organizational-environment interaction. Organizations must go beyond mere awareness of SI practice benefits to engaging in purposely pooling strategic intelligence skills. In order to cope with a turbulent environment, managerial practices should be enriched with engaging in sensing and seizing change, and acting before competition. Moreover, a genuine learning approach to collective intelligence practices would overcome cognitive dissonance in strategic decision and activate interpretative and iterative loops to enrich SI core skills for influencing future markets. SI cultural identity embraces collective filtering to develop insights about distant opportunities, while strategic leadership will take lead in exploiting competitive capital though open-mindedness and learning from consequential mistake experimentation.

2. STRATEGIC INTELLIGENCE CAPABILITY MATURITY MODEL (SI CMM)

The conceptual model highlights the degree of preparedness of four SI profile's behaviors (intelligence provider, vigilant learner, opportunity captor and opportunity defender) against seven levels of maturity. The SI CMM framework outlines both conditioned scanning capabilities (the first five SI readiness levels) and enablers to anticipate future market trends (the last two SI readiness levels).

SI CMM defines a systematic approach to pooling SI core skills, leverages SI expertise to

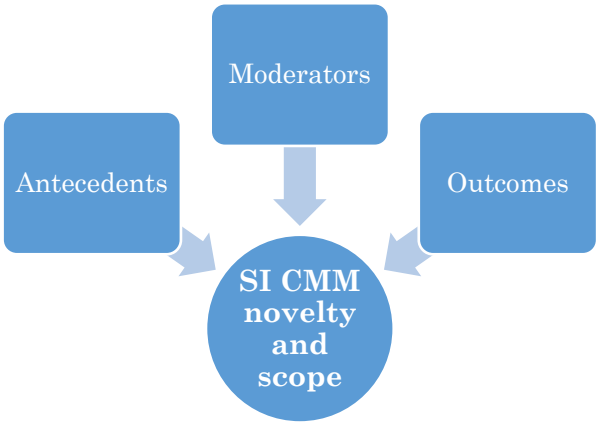

Figure 1 Key elements of SI CMM.

combine conditions affecting competitive response and enables organizational intelligence to influence future markets (Figure 1).

SI CMM antecedents reveal volatility, uncertainty, complexity, ambiguity and competitive pressure at the external level, while dynamic capabilities, test makers and test avoiders are related to the internal level.

SI CMM novelty resides on the knowledge discovery vocation and the competitive capital collection cases return on experiences to share within the community or practitioners to match the future need of SI core skills upgrading, while its scope deals with targeting profile-specific needs for updating SI knowledge.

SI CMM moderators aims to assess the lack of managerial anticipative skills associated with each SI profile identity. This is the coordination and sharing of SI common knowledge to enhance preparedness in forward-looking competitive pressures and the development of a supportive culture to enable organizational preparedness for assisted learning consultancy-based (conceptual training), business mentoring (problem solving), and procedural animators (action oriented).

SI CMM outcomes reveals profile-specific roadmaps to improve SI core skills tailored to four SI profiles, previously developed within exploratory research conducted by the authors (Figure 2).

SI core skills acquisition assisted learning consolidates profile-specific SI competitive identity through tailored interventions and enhances profile-specific capability to SI process self-improvements.

Drawing upon organizational intrusiveness and matching test makers vs test avoiders (Daft and Weick, 1984), profile-specific SI performance improvement with each maturity level assessment will focus on an iterative and interpretive approach to learning progress, tailored to each SI profile.

The intelligence provider (IP) develops core skills to distinguish between market challenges influencing organizational fitness, explores strategic trajectories to gain

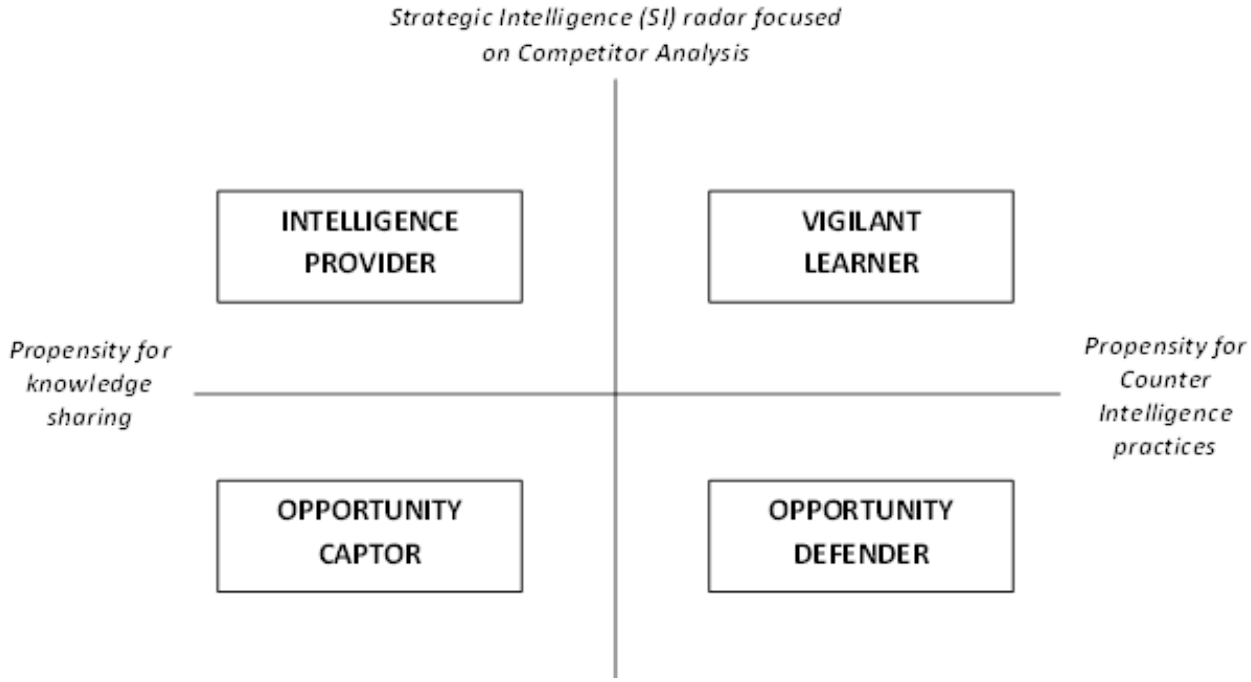

Figure 2 **The Strategic Intelligence profiling tool**. Figure reprinted from Bleoju, G., & Capatina, A. (2015). Leveraging organizational knowledge vision through Strategic Intelligence profiling-the case of the Romanian software industry. Journal of Intelligence Studies in Business 5(2).

proficiency in noise and consequential mistakes recognition, and pursues risk of failure minimization. Moreover, IP is capable of engaging systematic scanning of the environment with the specific purpose of blind spot recognition, while developing scenarios of their impact.

Vigilant learner (VL) leverages context-dependent knowledge gain to permanent upgrade case-based experience in discerning opportunities and threats, and adopts ready-to-adjust behavior in confronting future competitive contexts.

Opportunity captor (OC) pursues market challenger behavior by leveraging learning from imprinted consequential mistakes to recognize similarities in avoiding future failures through sensing changes and filtering among capturable challenges.

Opportunity defender (OD) focuses on market follower capability to protect market shares though systematicly avoiding consequential mistakes.

The SI CMM builds upon previous informative pilot testing of the SI profiling tool against four variables with high impact on organizational knowledge: strategic scope, organizational agility, organizational cultural change process and the approach of competitors.

The in-depth analysis of the SI CMM framework empirical testing outlines the SI profile specific core skills to develop in order to overcome managerial lack of anticipative skills (Table 1).

SI CMM claims to overcome the rigidity of a traditional maturity framework, being designed as an auto-adjustable organizational learning solution, through recalibrating the classical assessment toward a portfolio of exploring anticipative maturity profile-specific SI trajectories (Table 2 and Figure 3).

Phase 1. Conceptual training with basic features of each profile observed and initial skills assessment tailored to each profile need for improvement.

2.1 SIRL 1: entrepreneurs' missing skills in labeling strategic behavior. Focus on understanding the benefits of the SI profiling tool.

The seed stage focuses on understanding the benefits of the SI profiling tool, provides guidance with critical information to match organizational knowledge gaps and enhance profile alignment to industry competitive advantage dynamics. It also stimulates managerial reflections with *strategic scope decisions* regarding future market opportunities, key success factors and organizational configuration to meet strategic goals.

The first step in estimating SI readiness is to identify the strategic challenges - the positions in which the start-up in seed stage, with the right combination of skills, talent, and knowledge, has the biggest impact on enhancing its anticipative capabilities. The needs to cope with frequent environmental change and to deal with the strategic decision-making complexity require a renewed approach to the entrepreneurs' knowledge base. The conceptual training should adopt the open intelligence perspective (Calof, 2017) at this stage.

Table 1 SI profile specific core skills

Detective and anticipative core skills	**Intelligence Provider**	**Vigilant Learner**	**Opportunity Captor**	**Opportunity Defender**
Sharing vs protecting knowledge	Sharing knowledge	New knowledge acquisition	Competence portability	Effective reaction against competition
Intelligent filtering	Strategic agility	Process focused	Products and services	Operational efficiency
Strategic dissonance and cultural dissonance	Capacity to interpret weak signals of cultural dissonance	Culture favorable to change	Culture open to change and capacity to monitor the cultural dissonance	Capacity to monitor cultural changes
Enhance competitive response	Permanent care for upgrades and innovations	Focus on meeting the clients' needs instead of attacking rivals	Competitive advantage on harvesting over competences' portability	High capacity to detect competitors' threats

Table 2 Strategic Intelligence Capability Maturity Model (SI CMM).

	SI profiles			
SI Readiness Level	**IP**	**VL**	**OC**	**OD**
SIRL 1 **Seed stage: missing skills in labeling strategic behavior.** **Focus on understanding the benefits of SI profiling tool**	Non-replicable achievements Knowledge discovery Differentiation among competition	Replicable achievements Fresh knowledge acquisition	Wake up and act! Discern among opportunities	Wake up and pay attention to threats!
SIRL 2 **Positioning on SI profiling tool**	Actively seek information to upgrade the knowledge base	Learned behavior approach Passively seek information about the environment	Contextual Intelligence skills self-assessment Ready-to-adjust to competitive environment	Customized skills to cope with threats
SIRL 3 **Understanding how to accommodate with conflicting objectives derived from market orientation vs. vision orientation**	Improve capability to balance conflicting objectives Generate nonreplicable knowledge	Ability to leverage market vs vision orientation in filtering conflicting objectives Generate replicable knowledge	Unpredictable positioning payoff due to environment dependence Propensity to collaboration	Predictable payoff because context dependent Propensity to resistance
SIRL 4 **Develop profile specific core skills** **Anticipation and detective capacity as trainable qualities**	Recognize impactful signals before competition	Attention and confrontation to competitors' signals	Contextual Intelligence skills to deploy in specific industry Competence portability	Effective reaction against competition Protect market share
SIRL 5 **Activating profile specific core skills** **Developing agility and calibrating competitive response**	Strategic agility Focus on anticipatory cues of the competition Key future challenge recognition Noise recognition within a chain of non-consequential mistakes	Refinement of interpreting early enough competitive challenge Coordination in ready to adjust capability Learning from experimenting noise with consequential mistakes	React and wait! Quick response to capture only specific signals from industry trends Gain competitive experience	Wait and react! Learning from own and competition failure
SIRL 6 **Foresight skills to anticipate unexpected change recognition**	Sensing changes in competitive landscape	Seizing changes in competitive landscape	Ranking opportunities to develop sharpness in positioning	Ranking defense mechanisms Strengthening foresight skills from small consequential mistakes
SIRL 7 **Influence future markets as trend setter** **Strategic framing and promoting a SI culture**	Sharing cultural practices to set up new patterns of competition	Proficiency in overcoming cultural dissonance	Proficiency in leveraging cultural dissonance due to context unicity	Mastering cultural practices to avoid systematic failures in future markets

Setting up the **strategic scope** enables pre-profiling upon embedding knowledge from relevant experience of each profile on:

- Sharing knowledge differentiation among competition IP
- Fresh knowledge acquisition and capitalization seeking VL
- Competence portability OC
- Effective reactions to the competition's strategic behaviour OD

The SI preparedness journey will check IP against knowledge sharing propensity through systemically being alert to non-replicable achievements, while VL focuses on replicable achievements and will foster the acquisition of new knowledge.

In turn, the OC's propensity to *wake up and act* enhances competence portability, while the OD's actions (wake up and listen) enable effective reaction against competition.

The SI skills to develop in order to enhance competitive response will be focused on the IP's orientation toward change anticipation through recognitional reasoning, while VL focuses on analytical skills to capture relevant

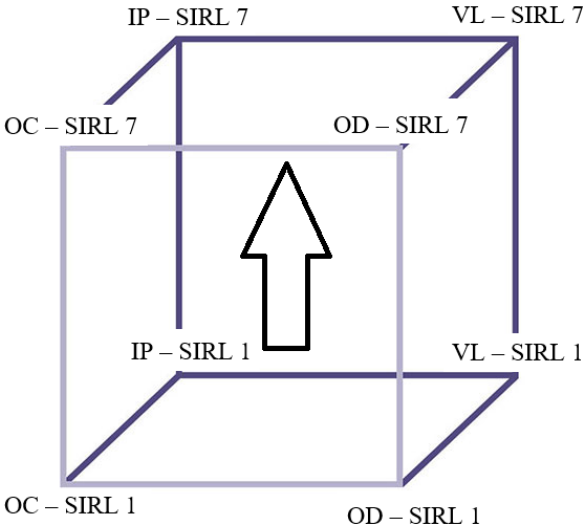

Figure 3 SI profiles maturity journey. Phase 1. SIRL 1-3 knowledge acquisition oriented with focus to match SI missing skills: conceptual training. Phase 2. SIRL 4-5 knowledge transfer oriented to improve core SI skill actionability, collective learning anticipative training, interpretative and iterative support. Phase 3. SIRL 6-7 reinforcement of profile specific core skills actionability is knowledge capitalization oriented to check proficiency upon SI core skills and influencing the future competitive environment, future oriented behavior training, developing the profile specific supportive culture to consolidate each competitive identity.

information and to commute it toward exploitable knowledge.

OC focuses on exploring benefits while systemically leveraging market footholds to challenge competitors' positions, while OD's concern is to protect market share and avoid consequential mistakes.

2.2 SIRL 2: entrepreneurs confronting concerns about positioning on the SI profiling tool

To confront concerns of basic SI requirements to comply with positioning on the SI profiling tool, the assessment will focus on:

- VL capability to learn through **actively seeking** information about the environment.
- IP capability to frame the organizational learning landscape through **actively selecting** information about the environment.
- **OC** adopting **conditioned scanning for the best differentiation** to discern among opportunities in a particular industry environment; seeking customizable achievements replicable across markets.
- **OD** customized skills to rank competitor threats valuable across industries.

In this stage, the entrepreneur's focus is to set specific SI competencies needed to perform the strategic jobs related to positioning on the SI profiling tool. The differences between the requirements needed to select an SI profile and the company's current SI capabilities leads to "competency gaps" that assess the organization's SI readiness. These SI missing skills are embedded in a training portfolio dedicated to the effective launch with the maturity journey.

2.3 SIRL 3: the entrepreneur understands how to accommodate conflicting objectives derived from market orientation vs. vision orientation

SI core capabilities check market orientation vs vision orientation on each profile. Leverage knowledge gains to match strategic scope and competitive pressures reveal how to act upon organizational agility to approach competitor threats:

- IP vision-oriented behaviour gains depth and ability to balance conflicting objectives. Generates nonreplicable knowledge.
- VL's ability to leverage market vs vision orientation in filtering conflicting objectives. Generates replicable knowledge.
- OC's ability to recognize distant opportunities. Distant opportunities are a challenge in BOP markets because there are a high number of consumers with very low spending power, therefore opportunities for differentiation are not obvious, and high risks of competence transferability among competitors erodes competitive advantages, therefore perceiving and prospecting are core skills to train.
- OD's ability to protect the market share while predictable positioning payoff is context dependent. Propensity to resistance.

Entrepreneurs are aware that creating a SI report regarding market orientation vs. vision orientation becomes compulsory. With such a report, they can analyze the SI readiness of the organization at a glance, easily detecting the

strategic domains in which more resources are needed to converge with a particular SI profile.

Phase 2. Intermediate level with interpretative and iterative support

2.4 SIRL 4: entrepreneur's self-assessment of the capability to develop profile-specific core skills

Experimental matching of SI capability areas and profile-specific core skills to evaluate strategic options to anticipate proficiency upon an intermediate level of SI maturity:

- VL develops adjustable instruments to comply with competitive environment pressures.
- IP seeks to improve organizational processing.
- OC develops its capability to capture distant opportunities before rivals and owns the capacity to detect the advantageous market niche.
- OD develops its capability to mislead competition with regard to its own strategy.

Entrepreneurs should avoid the risk of being overconfident in their ability to develop SI profile-specific core skills. They could be tempted to have high degrees of confidence that their company is prepared to fully adapt to a specific SI profile. Gaining effectiveness in strategic early warning is a chance in this step.

2.5 SIRL 5: Activating profile-specific core skills through strategic trajectories already selected

- OD is capable of internally employing mechanisms focused on results protection in order to exploit the ignored opportunities.
- OC is capable of anticipating the dynamics of the most advantageous market segments.
- VL is primarily oriented toward change anticipation.
- IP is focused on sharing knowledge designing instruments.

Developing agility and quickness

IP strategic agility
- Decision making abilities
- Focus on anticipatory cues of the industry
- Key future challenge recognition
- Coordination with ready-to-adjust capability

VL business model process agility
- Refinement of interpreting early competitive challenge
- Capacity to align managerial decisions to competitive environment
- Learning from experimenting scenarios with non-consequential mistakes

OC portfolio agility
- Quick response to capture only specific signals displayed by opponents
- Gain competitive experience
- Learning from competition failures

OD operational agility
- Wait and react to minimize consequential mistakes

Activating the SI profile specific core skills should overcome the risks of underestimating new sources of competition and/or impossibility to keep pace with disruptive trends in the next three to five years. Companies have to gain autonomy in interpreting market insights if possible, to act early enough.

Phase 3 Consolidate SI core skills with SIRL 6 and 7

2.6 SIRL 6: developing foresight skills to anticipate unexpected changes related to industry trends (SI sense-making)

- IP is developing a portfolio of anticipative scenarios based on market dynamics
- VL is fully aware about the importance of successfully embedding the customer experience in order to incessantly offer adaptation
- OC is systematically pursuing the premium market segments
- OD is deploying knowledge protection early warning mechanisms

The profile-specific facilitators of strategic positioning lie with OC and OD embracing a flanking attack for price sensitive segments and undisputed markets due to their sharpness in picking an own battles approach. In turn, IP and VL act as savvy sense-makers and refine

interpretive judgment with incomplete information about positioning payoffs by carefully checking for decision biases.

2.7 SIRL 7: mastering the capacity to influence future markets as a trendsetter (SI sense-giving)

The capacity to become proficient in future markets relies upon a cultural change approach. Therefore, each profile core skill should be consolidated to enhance the effective market response.

IP**,** endowed with sensing changes in facilitators and challenges, will become influential in promoting technological innovation. It will pursue a proactive approach to match facilitators and challenges; generate enablers to gain in the future value chain while consolidating the capability to cope with uncertainty and complexity.

VL focuses on seizing changes in facilitators and challenges; it will become proficient in orchestrating matching of selected dynamic capabilities to the competitive environment's future key success factors. Moreover, VL pursues proficiency in leveraging cultural differences through ambiguity and volatility tolerance.

OC will master the ability to capitalize upon its unique ability to rank opportunities with adopting sharpness in selecting its own battles. It will become proficient in leveraging cultural dissonance. Due to context unicity, nonreplicable performance is at stake.

OD will gain strength from small consequential mistakes while mastering vigilance in avoiding systematic failure.

3. CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

In the attempt to fully evolve from the fragile capacity to monitor cultural change to the most profitable capacity to recognize the value of cultural differences, a SI new profile emerges, Opportunity Provider (OP), as a repository of outliers and mismatches, due to ambiguous trajectories in each profile maturity journey. OP enacts as a test maker of SI core skills renewal, consistent with an emergent competitive identity prone to the knowledge discovery vocation, as SI's unique feature is to influence organizational intelligence maturity.

OP profile's core responsibility is to collect and interpret outliers and mismatches of IP, VL, OC, OD behavior when relying upon transient competitive advantage during an instable stage of maturity assessment.

OP's main features lie with coordination and sharing SI common knowledge to enhance preparedness in forward-looking competitive pressures. OP will monitor the risk of strategic dissonance upon the features of organizational cultural change and experiment with a therapeutic approach, through more refined decision-making support, as a basis for non-repeatable behavior.

The OP profile is built upon promoting a strategic leadership approach to master transient competitive advantage while trained to behave in an agile way, it embeds learning on organizational fitness to various competitive contexts. The OP profile identity lies with competitive capital influence in mastering and tracks pattern recognition when capturing opportunities.

SIRL 1 to 5 provide improvements in developing the capacity of what we do with what we see, while SIR 6 and 7 inquire about what we see and what we do not see, therefore OP focus on blind spots to capture distant opportunities.

Stages 6 and 7 make sense of Stages 1 to 5 of SI knowledge acquisition and provide improvements on SI actionability while developing foresight skills to anticipate unexpected changes.

OP acts as an early warning control of each profile capacity to cope with unexpected consequences associated with roadmap implementation of selected strategic trajectories on SIRL1 to 5.

The need for SI instruction level 1 through level 7 lies with profile specific learning support, ranging from sharing common SI knowledge (Level 1-5), while tailored guidance should focus (level 6-7) on developing managerial capability to active experimentation of enhancing competitive response. Sharing commonality focus is about gaining trust with the learning content and about capitalizing on past competitive successes and failures. The maturity gain lies with collective judgment in filtering causal associations of conditions in success and failure stories. Tailored organizational preparedness guidance supposes assisted experimentation of anticipated future competitive pressures with a focus on developing new SI core skills to enhance competitive responses.

Future research aims at exploring causal configurations of conditions (sensing change, seizing opportunities, business model innovation) affecting competitive response

preparedness (SIRL 6 and 7) through QCA methodology.

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How managers stay informed about the surrounding world

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ABSTRACT In this paper we look at how managers and knowledge workers stay informed about the events in the outside world that affect their organizations. Data was collected using a survey of 308 subjects from around the world. A model for how managers stay informed is presented. We introduce the idea of the proprietary cloud. The findings have implications for managers who want to compare their own sources of information and improve routines for information gathering.

KEYWORDS Business intelligence, intelligence studies, knowledge management, the proprietary cloud, workplace learning

1. INTRODUCTION

How do managers stay informed about the outside world on issues and events that affect their business? This is one of the basic questions not only in intelligence studies in business, but in management and business in general. It's a question that should be revisited at certain intervals as sources of information change, especially with new technologies and services.

Research on what managers read is scarce, which is surprising. Instead academics tend to focus on more general questions of knowledge management (KM), as shown in the theory chapter below. Non-academic literature sources tend to focus on what famous people read (or say they read/perception) or on what those who sell management literature and literature in general say managers should read. Another part of the literature on what to read takes the form of self-help, which shows how to cope with information overload and suggests how to handle stress. This can be quite banal. Holmes (2018): "If all else fails, take a small break".

Popular sources also focus on the problems with the information industry online and the fact that we are exchanging information for our privacy. For example, news organizations subject readers to third-party tracking (Libert and Pickard, 2015). This topic has been revitalized with the Cambridge Analytica scandal and the introduction of GDPR.

Griswold and Nisen (2014) describe what successful business leaders read: Warren Buffet tells CNBC he reads the Wall Street Journal, the Financial Times, the New York Times, USA Today, the Omaha World-Herald, and the American Banker, and that is only in the morning. Bill Gates reads the Wall Street Journal, the New York Times, and the Economist cover-to-cover, according to an interview with Fox Business. The Danish programmer David Heinemeier Hansson reads Reddit, Hacker News, Engadget, the Economist, Boing Boing, and Twitter. Jeffrey Immelt, the CEO of GE reads the Wall Street Journal "from the center section out". Afterwards he goes to the Financial Times and scans the FTIndex and the second section: "I'll read the New York Times business page and

throw the rest away". Charlie Munger is devoted to the Economist. Nate Silver, the FiveThirtyEight editor-in-chief, starts with Twitter, Memeorandum, and Real Clear Politics. Later in the day he reads blogs like The Atlantic, Marginal Revolution, and Andrew Sullivan (Griswold and Nisen, 2014). Elon Musk sticks out in his answer: "I read books" (Gautam, 2018). Many famous leaders and managers say they do their reading very early in the morning. They also exercise in the morning and do a lot of work then, which makes one wonder when they go to bed or if these answers can always be trusted.

According to a paper by McKinsey & Company (2017), leaders of some of the world's biggest organizations are all reading a series of three to six books at the time, fiction and non-fiction, with everything from Yuval Noah Harari, to Leonardo da Vinci and J. M. Keynes. Newspapers ask a similar question: what people have on the bedside table. It would be embarrassing to say that there was nothing there or that the books were just lying there half-forgotten.

What is missing from these sources is what managers in general read for their organizations to stay competitive, as we cannot assume that they follow the example of the persons mentioned above. There is, in other words, a research gap in how the well-educated, or the knowledge workers, keep informed about the world. This is an important question as it to a large extent has a direct effect on our actions, thus on the way companies are run. We would like to know where the managers get their information from and how they try to adapt to changes in the business environment. Such answers would also show what they do not read, which may be equally revealing.

2. METHOD

The population for this study is defined as any professional knowledge worker. A knowledge worker is an employee whose main capital is knowledge or who can be said to "think for a living". A professional here simply means someone who is employed. Thus, a more complete title for this paper could have been "How knowledge workers stay informed about the outside world", but for clarity and simplicity we chose the shorter version: what managers read.

A sample size of 1050 subjects were selected on LinkedIn by personal invitation. A pre-test was run for a general invitation but this resulted in few responses. Respondents were widely spread across the Western World, with about 1/3 of answers from Africa, Asia and South America. 326 complete answers were collected, where about half could be defined as "managers" and the other half as "knowledge workers", but with a substantial overlap. A manager is a person who controls a staff of employees. We should have added this as a control question. No questions were removed from the survey after an initial pre-test which included some 25 respondents. About 20% of the complete answers were taken out because they were not precise enough, giving answers like [I read] "Good Competitive Intelligence". At the end, 308 complete answers were used in the analysis. Answers of the same kind were omitted from Table 1, but the number of similar answers was counted.

The research strategy is a survey. The purpose of the research is exploratory, concentrating on three research questions:

> **RQ1**: How do you as a manager stay informed about what goes on in the outside world that affects your company?
>
> **RQ2**: What kind of newspapers, reports and TV/video do you access to stay informed about what is happening that affects your company?
>
> **RQ3**: In what other ways do you stay informed about what is happening in the outside world that affects your company?

The reasoning behind the choice of questions were as follows: questions should be exhaustive, repeating questions in detail (Q2), asking for deeper answers (Q3). The coding process: The data presented in the table went through a process in three stages: 1. clarifying and condensing meaning, 2. classifying key terms/notions and groups based on answers given, 3. placing the data in the appropriate group, and 4. counting occurrences of answers and weighing these with meaning in other answers in the same category (Q1) and with other categories (Q2 and Q3). The raw data are available upon request.

The extent of researcher interference has been minimal. The author's own opinions and experience as relates to the RQs is kept out of the analysis throughout the paper. The study setting is non-contrived, meaning the people were interviewed in their normal environment, in front of their personal computer, tablets or

phones. The unit of analysis is individuals. The data collection method is surveys using the service Surveymonkey and the analysis is qualitative. The time horizon for the research can therefore be said to be longitudinal.

3. THEORY

When searching in scientific databases on the question of how managers stay informed we found few, specialized and diverse answers. Suggestions of how to stay informed varied from participating in public policy discussion (Ellis, 2002) to tweeting (Turner, 2016). Searches on phrases such as "what people read" or "how people stay informed" gave very different results in Web of Science and Scopus, such as an article about what people read in France "between 1920 and 1950" (Chesneaux, 1996) or a quick survey done in a French cinema magazine (Ciment, 2008), related to Cinema viewers only.

The single largest amount of articles found refered to how to read the bible, or are specialized contributions like "letters in interwar New Zealand", or "The Boer war and the invention of masculine middlebrow literary culture". There was nothing substantial related to management or business. I realized this may also be symptomatic for the complicated way in which we have learned to write titles and frame problems as we avoid simple titles and subjects, even when they are good questions. Instead the social sciences often try to resemble the way that problems and specializations are framed and developed in natural sciences, with over-complicated titles and concepts which make finding the information more difficult.

These issues put aside, the general question of what to read has traditionally been studied under workplace learning and knowledge management, but there is hardly any area are of study in the social sciences that does not touch on the topic in one way or another. There is a substantial literature on news consumption. Schrøder, K. C. (2019) summarizes key findings in an online paper thus: People find those stories most relevant that affect their personal lives, which they can share with friends and on social media, which are amusing or weird. At the same time, we do want to stay informed on all levels, also internationally. It follows that we are not very good at achieving what we set out to do as rational beings, which is confirmed by much of the neural sciences during the past decade. We want good news, but often end up with entertainment because it is tempting and easily accessible. The shared notion that news is everywhere is making us believe that we are well-informed or that it's enough to read headlines. News avoidance is also a real issue discussed in this literature as news is seen as negative and we do not want too much negativity in our lives.

Other studies are focused on certain industries or sectors. Kay (2001) looks at how professionals in the hospitality industry read. She found that a significant number of lodging professionals tend to read hospitality industry and general business publications instead of academic research journals, but that academic journals were rated higher by managers regarding usefulness as a source for information on research, employee management, marketing, hospitality industry, and general business, as well as professional and personal development. Other papers and papers in general are less optimistic about the value of scientific articles.

The link to business intelligence is made, for example, by Schroeder (2015):

> "The widespread availability and accessibility of information via the Internet and other sources means that employees at all levels and areas of an organization are often able to directly retrieve and use data in their day-to-day work. New forms of data and analysis are rapidly emerging, particularly from the Web 3.0 technologies generating massive amounts of unstructured data that firms need to understand and utilize in pursuit of their business goals. These developments are resulting in a more data-conscious and data-driven business environment overall. Firms need to ensure that their employees are equipped with the right skills and expertise to exploit the opportunities offered by this while also managing the risks, such as misinterpretation or inconsistencies in data use."

Schroeder (2015) concludes that workers need the right skills and expertise to identify, interpret and apply relevant data and knowledge, and the organization must provide an overall environment that is supportive of and promotes data-driven activity. A manager looking for practical advice may wonder what the specific skills are, but this has not been a focus in the scientific literature. Liebowitz (2016), on strategic intelligence:

> "If we make this assumption, then knowledge is at the root of this equation and thus, the ability to leverage knowledge electively internally and externally should be a core competency for the organization. All this points to the area of "knowledge management" for competitive advantage."

Liebowitz, J. (2016) explain the difference between CI and KM as follows:

> "With business intelligence, the use of analytics (Davenport and Harris, 2007) and advanced information technologies often applied to assist the decision maker. Competitive intelligence (CI) deals with establishing a program for collecting, analyzing, and managing external intelligence (such as competitors, environmental scans, etc.) to improve organizational decision-making. Knowledge management (KM), as we discussed in the last chapter, looks at leveraging knowledge both internally and externally, but typically has an inward focus on maximizing human capital and other intellectual assets in the organization. Together, the synergies among these three areas (BI, CI, and KM) can result in what the author calls "strategic intelligence" (SI)."

McKenzie, et al. (2012) suggest that the best way to make employees inspired to learn about the world is by reducing hierarchies. This frees people to use their knowledge more responsively; geographical dispersion gives better access to specialist expertise wherever it exists. In the book "Understanding the Knowledgeable Organisation: Nurturing Knowledge Competence" McKenzie and Van Winkelen (2004) make similar observations.

The notion of tacit knowledge was introduced by Nonaka (2007). Tacit knowledge consists partly of technical skills – the kind of informal, hard-to-pin-down skills captured in the term "know-how." A master craftsman after years of experience develops a wealth of expertise "at his fingertips":

> "These activities define the "knowledge-creating" company, whose sole business is continuous innovation. Deeply ingrained in the traditions of Western management, from Frederick Taylor to Herbert Simon, is a view of the organization as a machine for "information processing." there is another way to think about knowledge and its role in business organizations. It is found most commonly at highly successful Japanese competitors like Honda, Canon, Matsushita, NEC, Sharp, and Kao. "The centerpiece of the Japanese approach is the recognition that creating new knowledge is not simply a matter of "processing" objective information. Rather, it depends on tapping the tacit and often highly subjective insights, intuitions, and hunches of individual employees and making those insights available for testing and use by the company as a whole."

The idea that a company is not a machine, but a living organism, leads to the evolutionary approach. It's not an accident that this comes from a Japanese scholar. The evolutionary approach was well-developed in Germany and Japan and interest prolonged also after WWII. The narrative is often the same. Social life on our planet is consistently changing. Managers and professional must adapt to these changes to stay competitive. Adapting to these changes first of all means getting new knowledge and skills. New knowledge and learning come predominantly through education and reading. What managers chose to read has a direct effect on how well the organizations that they are set to lead are able to compete in the market. The question then becomes what to read. The answer will to a large extent depend on the industry that we are in. Cultural factors also play a role. The evolutionary approach is also supported in McKenzie, et al. (2012): "Tension is essential to a healthy system: it triggers adaptation."

From the theory review it must be concluded that the question of what mangers should read has not been the object of scientific investigation, and thus represent a gap in the research. Existing theory will be used to compare empirical findings and to conduct an analysis.

4. DATA AND ANALYSIS

The answer data from the three main questions from 308 subjects was exported into MS Excel. Comments about sources could be classified into general sources, HUMINT related sources, specific sources, internet-based sources and TV and radio sources, as in Table 1.

When reading the different classes of data, we see that the separation between TV and internet is not that clear, even though it still make sense to keep this classification. Nor is there a clear distinction between physical

papers and the internet as different sources, including radio, are digitalized and available over the Internet. A subscription to, for example, The Economist can give access to the physical journal and the web-based journal, as part of the same subscription.

From the data we can draw a number of immediate conclusions:

- No one said they read books
- New media companies are dominating as providers of competitive information: Google, YouTube, LinkedIn, Facebook, Twitter
- People watch TV news first of all, to the extent that the content is available on YouTube
- Trade shows are a major source of information
- Radio is not a significant source of information anymore, with the exception of in places like the African continent and to a certain extent in France
- HUMINT is still considered highly relevant for information gathering, on all levels and across organizations. This includes "co-workers and colleagues", but also gossip and "friends in the media".
- Many managers say they get their best information through emails, from Google and the act of googling. This makes Google LLC the single most important source for competitive intelligence.
- A number of reports are widely popular, for example from OECD, IMF, and the World Bank, but those are also distributed by the major consulting companies.
- Most managers read a combination of their local and/or national news and international news.
- The most popular sources offline are The Economist, WSJ, and NY Times.

There is a strong notion that "open source is mostly noise". This implies that managers are willing to pay for good information because searching in Open Source is often found to be a waste of time. It may also mean that managers feel they are not able to search effectively in Open Source.

Table 1 Sources of knowledge for managers and knowledge workers.

General sources	Magazines, tech magazines, professional newsletters, financial column in newspaper, business report, online newspaper feeds, social media feed, regular gazettes, blogs, vlogs, scientific papers, regulatory bodies, significant movement or activities in the market, consultancy services and media monitoring services, internal financial data, operational activities, technological advancements, annual reports, events and congresses, focus on credibility of information, previously acquired, subscribing to specialists on macro-economics, reports from business consultancies from big 5, continuously update internet crawl targeting, corporate news of relevance that feeds into a news dissemination intranet system, press releases of companies, scientific community, industry white-papers, internet forums, gossip
HUMINT	Engaging suppliers, channel partners, competitors. keep a keen eye on sectors, events and people, journalists covering the sector, rely on communication department, peers in other regions, personal network and relationships with top officials, media friends, discussing topics with co-workers and partners, competitor analysis, competitor's employees, a friend circle with successful people, informal meetings with experts, events organized by embassies or trade associations, coworkers and colleagues
Specific sources	Economic Times, Financial Times (FT), Khaleej Times, Gulf News, (Brazilian) National Industry Confederation Reports, Ghanaian Times, Daily Guide, Business and Financial Times and The Dispatch, The Economist, Autonews, Automobilwoche, Manager Magazine, Focus, Handelsblatt, Il Sole 24 ore, Business Insider, Forbes, BBC, In Sweden: DN, SVD, DI, HBR, NRC, Handelsblad, Le Monde, Le Figaro, MIT review, Verge, Techcrunch, McKinsey Q, BCG, Bain, Deloitte, WEF, Goldman Sachs, The Guardian, El Païs, UBS, Exane, Barclays, Times Higher Education, QS World Ranking, Guardian League Table, Fortune
Internet-based	LinkedIn, YouTube, Gmail Alerts, Google search, emails, thinkerview, Diane, Orbis, Kompass, TEDx, Reuters, Specialized tech content (Gartner, IDC), CB Insights, Infodesk, Swedish Tax Organizations Information, Wikipedia, Crunchbase, Mapegy, Clarivate, Foresight, Resumé, Journalisten, Dagens Media, Medievärlden, Digiday MediaGuardian, Nieman Lab, Reddit, Google News
TV-Radio	CNN, Sky News, CNBC, Bloomberg, GTV (Ghana), France Info, Aljazeera, Euronews, France Culture, Joy NewsTV (Ghana)

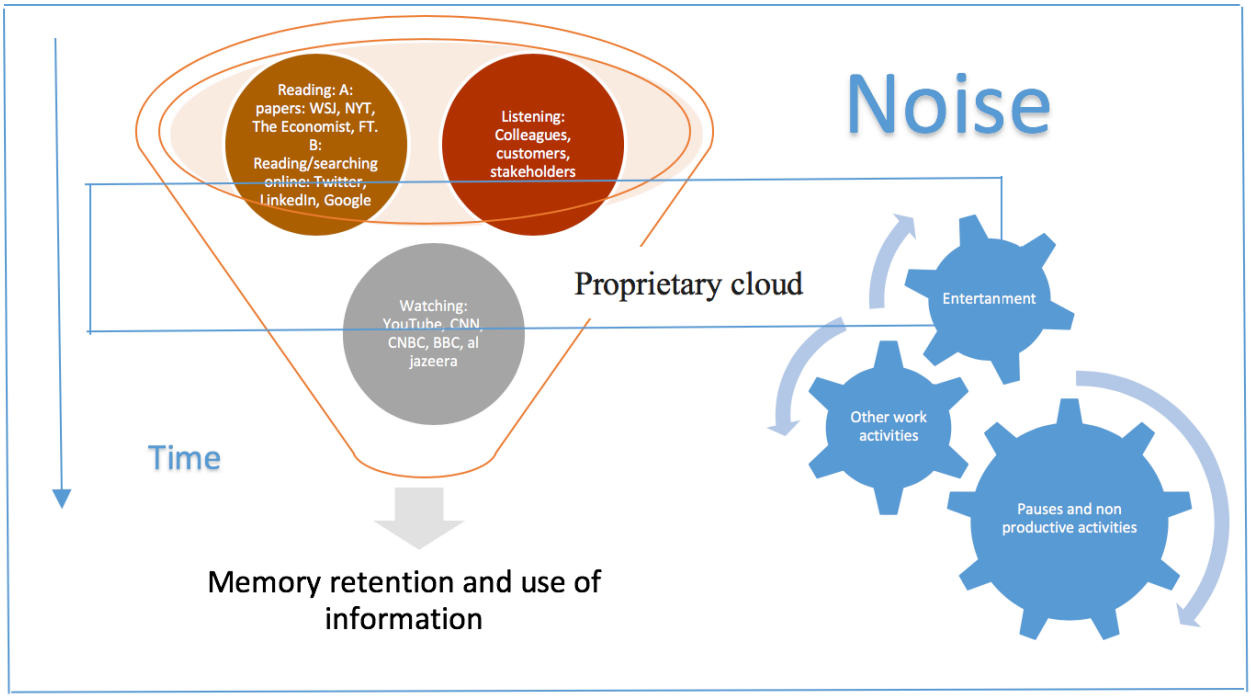

Figure 1 The manager's model for staying informed.

HUMINT plays a large role as a source of information, but no one mentions travelling by itself as a source of learning about the world, which is something Westerns used to value highly (Søilen, 2016). Today it seems to be more Asian which are "roughing it", while western youth prefers "to party" and have fun. This may be symptomatic for the decline of the West, as Julius Caesar surely would have noted if he had lived today [he warned his own youth against the rise of the Germans in the book the Gallic Wars].

From the answers, the managers' information gathering can be divided into three parts or distinct activities: listening, reading and watching. These correspond to our most important senses for information gathering, hearing and seeing.

Based on these conclusions and on the existing theory presented above, a model was constructed to make sense of the different components, as shown in Figure 1.

In Figure 1, the larger square box represents all the information available. Inside that box most information is Open Source and most of this is considered 'Noise', or at best nice-to-know information. The opposite of Open Source (which is free) is proprietary. Proprietary information comes in many categories, as part of what we read, what we hear (as in consultancy), in what we watch and as part of the entertainment we consume. At the same time there are parts of the same four categories that are also Open Source. The smaller box is the proprietary cloud. I's called a cloud because it is hanging over the available information we search for, often in the form of barriers, or information behind paywalls.

What we read, see and listen to are the groups of categories where we actively seek to gain new information. These groups are placed in a funnel in the model, where the amount of information retained diminishes with time. What comes out of the funnel is the information that we use which is only a small part of all the information we take in from the beginning (to of funnel). The reason is that we forget parts of what we read even in the shorter term (memory loss) and that the situations we are confronted with in business life only demand that we use a very small part of what we read. Thus, what comes out of the funnel is a function of memory retention and the use we have of information that was acquired.

The information age means that information is in abundance, but this is a mixed blessing as most information is "useless, trivial and distracting". Thus 'noise' is a major problem in the process. The challenge with noise is not to put any of it in the funnel, meaning that we must disregard it from the very beginning once it has been identified. We can use AI and machine learning to help us sort out the noise, much like in spam filters

So far, the model presented could make an ideal model in an ideal world, but theory suggests there are other components to be added. One part is that we mix intelligence with entertainment as we search. We are continuously being drawn to other tempting sorts of information that are distracting and stealing our time, but which at the same time we seek. Humans are not machines. We do not spend all of our working time even gathering and analyzing intelligence. Instead we have a need to take pauses, perform other tasks (out of necessity and to avoid monotonies), and we want to be entertained. Entertainment has never been more accessible than now with the Internet (not only cat and dog movies). Thus, these three parts may be seen as a necessary part of the information gathering process for it to work, and must be included in our model to make it more realistic.

A major question is how good the sources that are identified above in the survey are for the purpose of monitoring the world. This brings us to the second major question which is what alternative sources of information there are that are missed by the respondents in the survey. Those included are overall mainstream. We see that those missing are non-Western.

A more detailed answer is that major external sources are missing like the TV stations CGTV (pro China) and RT (pro Russia), often labeled as propaganda channels by Westerners. Then there are narrower Western channels like Democracy Now! (TV) and the economic blogs Zero Hedge and Naked Capitalism. There are numerous university professors in business and economics who blog regularly, like Michael Hudson, Steve Keen and Richard Wolff, none of whom tend to appear on mainstream lists of economic bloggers. Even main stream bloggers like Robert Reich, Stephen Stieglitz and Paul Krugman are missing from the survey. Institutional blogs are also missing like IMF, the Mises Institute and Council on Foreign Relations, just to mention a few. Another problem altogether is that many respondents say they use Twitter, but we do not know who they are following which makes a whole world of difference. From the major papers we miss China Daily and Asahi News (Japan). Otherwise there are numerous newspapers in Japan and Pakistan with large circulation but their impact is more local. Then there are the major magazines missing like Der Spiegel, Newsweek, Time magazine, Foreign affairs, Harpers, New Statesman, The Spectator, and Focus (German). For France: L'Express, Le Point, L'Obs and Jeune Afrique. In Italy: L'Espresso and Panorama. Wikileaks was another major source of information missing even though many probably read or see the stories coming from there but printed in other media outlets.

5. CONCLUSION, IMPLICATIONS AND FUTURE RESEARCH

There are two main conclusions to be drawn from the data. The first is what is in the data, which is what managers and professionals say they read. The other is what is implicit in the data that is what is missing, what respondents do not read. We see that managers mainly read mainstream and western sources. That is not a major problem for the companies as long as valuable information comes from these sources, which is not given. It is a risk that these sources present the same world view, especially as the Western world is losing economic influence to Asia and China in particular. Western managers have a knowledge deficit when it comes to their major competitors and to Asian cultures which can be seen through what they read, but more so, what they do not read. It's noteworthy to see that managers do not read more books and scientific articles. Radio is probably better than the attention it gets from managers as a source of valuable information. We also see that few respondents read news agencies directly except for Reuters. They do not read smaller, narrower publications except for special trade magazines or for specific industries. The survey also suggests that managers and professionals read more heuristically, not necessarily what gives the most valuable information, and they do not read in an organized fashion.

The competitive company is an intelligence driven organization. This is more true today than ever before in history. Still it can be argued that managers and knowledge workers in general are not handling the question of what to read professionally. Instead much is ad-hoc and based on habit. Others know that they have to get good information to know what is happening in the world, but fail to access it. Learning is not only a question of what the individual reads, but of spreading the message around repeatedly through frequent dialogue and communication. On this point, managers report that they do quite well.

6. FUTURE STUDIES

This and other studies focus primarily on what people say they read. More studies are needed on what managers actually read, what they recall from reading and what they actually use to make decision.

There is another question almost equally important and that is how to read, from what platforms. This raises another question which is when to read what. As we have seen from popular sources, managers say they read early in the morning, but they also prefer to eat and exercising during this time and the morning is only so long.

It would be interesting to know how much time we are using on each of the different categories of sources. We are changing back and forth between sources much more than before. This leads to news as a series of distractions which is deteriorating our concentration in general. The consequences of this on our understanding of what we read will have to be studies, but preferably then by psychologists and neuroscientists.

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