Swedish and German Companies' Usage of Artificial Intelligence Until 2021

A survey conducted by the German-Swedish Chamber of Commerce on their members to find out changes in usage of AI until 2021

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Abstract

German-Swedish Chamber Commerce offers professional services, including finding and matching business partners. The Chamber has almost 1200 company members in both Sweden and Germany. The survey was conducted by Tomas Falk in cooperation with German-Swedish Chamber of Commerce as a part of his Master thesis in Digital Management at Teesside University/Hyper Island. The web survey was carried out in December 2018 and January 2019. The purpose of the survey was to find out changes in usage of artificial intelligence (AI) until 2021 among member companies and the main obstacles for increasing the usage of AI. The Survey target group was the Chamber's member companies working within Services, Manufacturing and Retail. The net reach of the survey was 210 respondents, which result in a total response rate of 20,7%. 86% of the Swedish respondents had Executive position and 68% of the German respondents.

The first question of the survey was: In which of the following business functions do you believe that your company will start or increase using AI until the end of 2021?

Swedish Companies		German Companies	In Total			
1	Sales and Marketing (25,4%)	Not at all (28,6%)	Not at all (25,2%)			
2	Not at all (23,0%)	Manufacturing (23,8%)	Sales and Marketing (21,4%)			
3	Customer Service (22,2%)	Distribution (16,7%)	Customer Service (19,0%)			

It is surprising that one out of four respondents will not increase the usage of AI until the end of 2021. It is the top reply among German companies and in second place among Swedish companies. Swedish companies seem to focus on increasing the usage of AI in the areas of Sales & Marketing and Customer Service, while German companies are increasing usage in Manufacturing and Distribution.

The second question of the survey was: What do you believe are the three main obstacles for your company to increase the usage of AI services?

	Swedish Companies	German Companies	In Total
1	Lack of internal competence on how to implement AI in our business (31,7%).	Lack of internal competence on how to implement AI in our busi- ness (34,6%)	Lack of internal competence on how to implement AI in our business (32,9%).
2	Shortage of relevant AI servic- es and suppliers on the market (26,2%).	Shortage of relevant AI servic- es and suppliers on the market (30,9%)	Shortage of relevant AI services and suppliers on the market (28,0%).
3	Missing a clear internal digital strategy that includes AI (23,0%).	Uncertainties about government legislation and regulations surrounding AI (23,5%).	Missing a clear internal digital strategy that includes AI (23,2%).

There is an outspoken shortage of AI competence among the Swedish and German companies participating in the survey. The lack of internal AI Strategies indicates that senior management has not yet prepared their organisations for an accelerating commercial usage of AI. There is also a gap between buyers and sellers of AI services. Buyers do not have enough knowledge about AI technology to understand the commercial potential of AI. Sellers, on the other hand, have difficulties in packaging and communicating relevant AI services.

Most experts agree on that next phase in the digital transformation will be based on AI. Hence, it is crucial for companies' senior management to educate themselves to fully understand the future business potential of AI. Furthermore, it is urgent for all companies to start up simpler AI pilot projects in purpose to understand the technology better and to involve the whole organisation in the incremental integration of AI in the company business operation.

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1. Background

The survey was conducted by Tomas Falk in cooperation with German-Swedish Chamber of Commerce as a part of his Master thesis in Digital Management at Teesside University/Hyper Island. The overall scope of the master thesis was "Swedish Companies and Artificial Intelligence – how can Sweden keep its position as an incubator of successful companies when the digital transformation goes into the era of artificial intelligence?" This report is a rewrite of the chapter containing the survey result.

10% of Sweden's export goes to Sweden's southern neighbour. Germany, on the other hand, stands for almost 20% of Swedish import (SCB, 2018). There is a lot of focus on the USA and China in the debate about AI, but the reality is that it is crucial for the Swedish economy that Swedish companies are competing successfully also on the German market. One way to achieve this is to encourage Swedish companies to a greater extent use AI is in its operations and products/services.

Swec	len's biggest export markets	Million SEK
1	Germany	131 303
2	Norway	124 821
3	Finland	83 495
4	Denmark	82 520
5	USA	80 535
6	Netherlands	69 317
7	υк	68 435
8	China	54 827
9	France	50 721
10	Belgium	48 039

Figure 1. Top 10-list of Sweden's export countries for 2018 (SCB, 2018)

When the author searched for a suitable collaborator for doing a quantified web survey about AI directed towards Swedish companies, it also seemed appropriate to include a comparison with Germany. Consequently, the German-Swedish Chamber of Commerce was contacted by the author. Of a pure coincidence, it turned out that they were planning to have AI as the theme on their next web survey towards their Swedish and German company members. After a meeting with Malin Johansson, Communication Manager at the Chamber, they decided to let the author of this essay be responsible for the design of the survey content and the analyse of the result.

1.1 German-Swedish Chamber of Commerce

German-Swedish Chamber of Commerce is located in Stockholm with more than 50 employees. The Chamber offers professional services, including finding and matching business partners. Their service comprises personalised evalution of the business development, marketing and sales potential in Sweden or Germany of all types of products. German-Swedish Chamber of Commerce is a part of the German foreign trade chamber organisation AHK, which is located in over 140 cities in 92 countries. Also, the Chamber is a part of Team Sweden for Germany, a selected group of authorities and other stakeholders who help companies to be internationalised and which was founded by the Swedish government in 2016. The Chamber has a total of almost 1200 company members in Sweden and Germany, including both large and smaller companies with business in manufacturing, retail and service. The main reason for being a member is that the company is importing from or exporting to Sweden/Germany (German-Swedish Chamber of Commerce, 2018)

1.2 Briefly about the definition of AI

There is no generally accepted definition of Artificial Intelligence since it has so many different potential areas of applications but can generally be described as technology imitating capabilities of a human mind. AI draws from a variety of academic fields, such as mathematics, computer science, linguistics, engineering, physiology, philosophy, and psychology (Muggleton 2014). Simply put, artificial intelligence (AI) is machines that have the ability to perform cognitive tasks by mimicking the human brain's way of handling analysis, learning and memory management. Max Tegmark defines the meaning of Artificial Intelligence and its related terms by breaking down the definition into the meaning of separate words (Tegmark, 2017, p. 51ff):

- Artificial Intelligence (AI). Non-biological Intelligence.
- Artificial Narrow Intelligence (ANI). AI with the ability to conduct specific tasks and reach specific goals, also called Weak AI.
- Artificial General Intelligence (AGI). The ability to conduct any cognitive task as good as a human being, asp called Strong AI.

Humanity so far, have only managed to develop solutions with Artificial Narrow Intelligence (ANI), also called weak AI. AI-experts debate if Artificial General Intelligence (AGI), also called Strong AI, ever will be reality, and if so when this it will happen and its consequences. Terms often used in the context of AI is *Machine Learning* (machines with the ability to learn without being explicitly programmed and *Deep Learning* (advanced Machine Learning technique that imitate the brain with so-called Neural Networks).

2. How the survey was conducted

The author designed the content, and the German-Swedish Chamber of Commerce sent out the survey to their members to ensure compliance with the GDPR laws (and to ensure a more relevant and credible sender than a Master student). Due to senior executives' time constraints, the survey was designed with only three questions able to carry out on 3 minutes:

- 1. In which of the following business functions do you believe that your company will start or increase using AI until the end of 2021?
- 2. What do you believe are the three main obstacles for your company to increase the usage of AI services?
- 3. What other opinions and thoughts do you want to share regarding AI?

Both question one and two offered set response options plus the option to note their own alternative in free text. Question three was an open question on which the respondents had the chance to express their opinions and thoughts freely on the subject AI. Furthermore, the survey had to enter in what country the company was situated and whether the company's business was directed towards services, manufacturing or retail.

The web survey was sent out December 11, 2018, and was followed up with a reminder on December 17. Respondents were able to choose for themselves if they preferred to carry out the survey in Swedish or German. The survey was closed down January 15. The author received all the raw data the same day. However, due to GDPR without any information about names if companies and contact persons.

3. Survey Target Group

Of German-Swedish Chamber of Commerce's 1150 company members, 137 have stated that they do not wish to receive any survey mailings. The gross scope of the survey was therefore 1013 companies distributed on 641 in Sweden and 372 in Germany. Each company has only one contact person who usually is on Executive C-level. 86% of the Swedish respondents had Executive position and 68% of the German respondents.

The net reach of the survey was 210 respondents, which result in a response rate of 20,7% (see table below):

	Gross Scope	Net Reach	Response rate
Sweden	641	131	20,4%
German	372	79	21,2%
In total	1013	210	20,7%

Figure 2 below presents the distribution of respondents overall business focus (services, manufacturing or retail):



Figure 2. The distribution of respondents overall business focus (services, manufacturing or retail).

The majority of the participators, both by country and in total, are working in the field of Services. At second place is Manufacturing for both countries, even though it is considerably more dominant among German participants. The number of non-response of this question is 3,3% (7 participators).

4. Change in AI Usage until 2021

The first question of the survey was: "In which of the following business functions do you believe that your company will start or increase using AI until the end of 2021?". The question had nine set response options plus an option to write their own alternative. In order to make it easier for the respondent to understand what AI can do within each business function, each response alternative also contained examples of AI application:

- Product Development (e.g. optimizing cycle and features)
- Manufacturing (e.g. process optimizing and automation)
- Distribution (e.g. logistics, storage)
- Maintenance and service (e.g. predictive intervention)
- Customer Service (e.g. Customer Feedback Analysis)
- Sales and marketing (e.g. lead generation, pricing, promotion, forecasts)
- Human Resources (e.g. talent recruitment and retention)
- Financial Management (e.g. accountancy, analysis)
- Strategy and Corporate Finance (e.g. investment analysis, yield optimization)
- Other company functions, such as:
- Not at all
- Do not know

Figure 4 shows the response result of question 1, both in total and broken down by country. One of four respondents state that they will not start, or increase, using AI until the end of 2021. Swedish companies seem to have an interest in using AI in the area of customer interaction (sales, marketing and customer service), while German companies primary focus is more on manufacturing and distribution.

4.1 Result Broken Down on Countries

Figure 3 below shows the answers of question 1 ranked from 1-12, both in total and broken down by country and Figure 4 on next page presents a more visual overview.

	Swedish Companies (126 respondents)	German Companies (84 respondents)	In Total (210 respondents)
1	Sales and Marketing (25,4%)	Not at all (28,6%)	Not at all (25,2%)
2	Not at all (23,0%)	Manufacturing (23,8%)	Sales and Marketing (21,4%)
3	Customer Service (22,2%)	Distribution (16,7%)	Customer Service (19,0%)
4	Do not know (17,5%)	Sales and Marketing (15,5%)	Manufacturing (16,7%)
5	Product Development (16,7%	Maintenance and service (15,5%)	Product Development (15,2%)
6	Financial Management (12,7%)	Customer Service (14,3%)	Do not know (14,8%)
7	Manufacturing (11,9%)	Product Development (13,1%)	Distribution (13,3%)
8	Distribution (11,1%)	Do not know (10,7%)	Maintenance and service (11,9%)
9	Maintenance and service (9,5%)	Financial Management (8,3%)	Financial Management (11,0%)
10	Human Resources (8,7%)	Other company functions (7,1%)	Human Resources (7,6%)
11	Strategy and Corporate Finance (4,0%)	Human Resources (6,0%)	Other company functions (5,2%)
12	Other company functions (4,0%)	Strategy and Corporate Finance (6,0%)	Strategy and Corporate Finance (4,8%)

Figure 3. Answers of question 1 ranked from 1-12, both in total and by country.

Question 1. In which of the following business functions do you believe that your company will start or increase using AI until the end of 2021?



Figure 4. The response result of question 1, both in total and broken down by country.

The highest ranked answer in total is "Not at all" (25,2%). That means that the respondent does not believe that the company will start or increase using AI until the end of 2021. This is also what almost one third of the German respondents have answered (28,6%). However Swedish companies rank Sales and Marketing highest (25,8%).

Optional Free Text Answers Question 1

It is in total 11 respondents who have chosen to complement with their own free text alternative. Below in Figure 5 is an overview of these, including nationality and respondent's business focus.



Figure 5 Optional free text answers question 1.

4.2 Result Broken Down on Business Focus

Figure 6 below shows the response result of question 1 broken down on company business focus and by country.

		Services			Retail				Manufacturing		
Question 1: Usage	Swedish	German	In total	Swedish	German	In total	Swedish	German	In total		
Product Development	18,5%	9,1%	14,7%	7,7%	20,0%	9,7%	16,1%	18,8%	17,5%		
Manufacturing	6,2%	11,4%	8,3%	3,8%	20,0%	6,5%	29,0%	43,8%	36,5%		
Distribution	7,7%	11,4%	9,2%	7,7%	40,0%	12,9%	19,4%	21,9%	20,6%		
Maintenance and Service	4,6%	13,6%	8,3%	11,5%	0,0%	9,7%	19,4%	21,9%	20,6%		
Customer Service	29,2%	20,5%	25,7%	19,2%	0,0%	16,1%	12,9%	9,4%	11,1%		
Sales and Marketing	30,8%	18,2%	25,7%	19,2%	20,0%	19,4%	19,4%	12,5%	15,9%		
Human Resources	15,4%	6,8%	11,9%	3,8%	0,0%	3,2%	0,0%	6,3%	3,2%		
Financial Management	16,9%	9,1%	13,8%	15,4%	0,0%	12,9%	3,2%	9,4%	6,3%		
Strategy & Corp. Finance	6,2%	9,1%	7,3%	3,8%	0,0%	3,2%	0,0%	3,1%	1,6%		
Other company functions	23,1%	25,0%	23,9%	30,8%	40,0%	32,3%	19,4%	25,0%	22,2%		
Not at all	15,4%	15,9%	15,6%	19,2%	0,0%	16,1%	19,4%	6,3%	12,7%		
Do not know	6,2%	11,4%	8,3%	0,0%	0,0%	0,0%	3,2%	3,1%	3,2%		

Figure 6. The result of question 1 broken down on business focus and country.

Figure 6 above is based on 31 retail respondents (26 Swedish + 5 German), 63 manufacturing trading respondents (31 Swedish + 32 German) and 109 services respondents (65 Swedish + 44 German). Seven participators (4 Swedish + 3 German) did not respond to the question about company business focus. Consequently, these ones are excluded in the table. Dark blue fill is the most top ranked function. Light blue fill is equal with rank two and three of company (more when there is several with identical percentage).

5. Main Obstacles for Increasing Usage of AI

The second question of the survey was: "What do you believe are the three main obstacles for your company to increase the usage of AI services?". The question had following 12 set response options.

- Shortage of relevant AI services and suppliers on the market.
- Lack of internal competence on how to implement AI in our business.
- Decision makers have difficulty understanding what AI is and how it can be used.
- Uncertainties about government legislation and regulations surrounding AI.
- Missing a clear internal digital strategy that includes AI.
- Low experience of making requirement specifications and procuring AI services.
- There is no specific budget for investments in AI services.
- The attitude towards AI is generally negative among customers and the general public.
- Unclear what persons who are responsible for the development of AI within the organisation.
- Staff and managers are unsure/afraid of how AI will affect their work.
- AI technology needs to be more general than today's narrow and specialised applications.
- Do not know

Question 2. What do you believe are the three main obstacles for your company to increase the usage of AI services?



Figure 7. The response result of question 2, both in total and broken down by country.

5.1 Result Broken Down on Countries

Figure 7 shows the response result of question 2, both in total and broken down by country. Figure 8 below shows the response of question 2 ranked from 1-12, both in total and broken down by country:

	Swedish Companies (126 respondents)	German Companies (81 respondents)	In Total (207 respondents)
1	Lack of internal competence on how to implement AI in our busi- ness (31,7%).	Lack of internal competence on how to implement AI in our busi- ness (34,6%)	Lack of internal competence on how to implement AI in our busi- ness (32,9%).
2	Shortage of relevant AI services and suppliers on the market (26,2%).	Shortage of relevant AI services and suppliers on the market (30,9%)	Shortage of relevant AI services and suppliers on the market (28,0%).
3	Missing a clear internal digital strat- egy that includes AI (23,0%).	Uncertainties about government legislation and regulations sur- rounding AI (23,5%).	Missing a clear internal digital strat- egy that includes AI (23,2%).
4	Do not know (22,2%).	Missing a clear internal digital strat- egy that includes AI (23,5%).	Uncertainties about government legislation and regulations sur- rounding AI (17,9%).
5	AI technology needs to be more general than today's narrow and specialised applications (15,9%).	AI technology needs to be more general than today's narrow and specialised applications (17,3%)	Do not know (17,4%).
6	Uncertainties about government legislation and regulations sur- rounding AI (14,3%)	Low experience of making require- ment specifications and procuring Al services (14,8%)	Al technology needs to be more general than today's narrow and specialised applications (16,4%).
7	There is no specific budget for in- vestments in AI services (14,3%).	Decision makers have difficulty understanding what AI is and how it can be used (13,6%)	Low experience of making require- ment specifications and procuring AI services (13,0%).
8	Low experience of making require- ment specifications and procuring Al services (11,9%).	There is no specific budget for in- vestments in AI services (11,1%)	There is no specific budget for investments in AI services (13,0%).
9	Decision makers have difficulty understanding what AI is and how it can be used (11,1%).	The attitude towards AI is generally negative among customers and the general public (9,9%)	Decision makers have difficulty understanding what AI is and how it can be used (12,1%).
10	The attitude towards AI is generally negative among customers and the general public (7,1%).	Do not know (9,9%).	The attitude towards AI is generally negative among customers and the general public (8,2%).
11	Unclear what persons who are re- sponsible for the development of AI within the organisation (4,0%)	Unclear what persons who are re- sponsible for the development of AI within the organisation (7,4%).	Unclear what persons who are re- sponsible for the development of AI within the organisation (5,3%).
12	Staff and managers are unsure/ afraid of how AI will affect their work (4,0%)	Staff and managers are unsure/ afraid of how AI will affect their work (7,4%)	Staff and managers are unsure/ afraid of how AI will affect their work (5,3%).

Figure 8. The result of question 2 ranked from 1-12

5.2 Result Broken Down on Business Focus

Figure 9 below shows the response result of question 1 broken down on company business focus and by country. The result is based on 31 retail respondents (26 Swedish + 5 German), 63 manufacturing trading respondents (31 Swedish + 32 German) and 109 services respondents (65 Swedish + 44 German). Seven participators (4 Swedish + 3 German) did not respond to the question about company business focus. Consequently, these ones are excluded in the table. Dark blue fill is the most top ranked function. Light blue fill is equal with rank two and three of company (more when there is several with identical percentage).

	Services				Retail			Manufacturing		
Question 2: Obstacles	Swe	Ger	Tot	Swe	Ger	tot	Swe	Ger	Tot	
Shortage of relevant AI services and suppliers on the market.	36,9%	27,3%	33,0%	19,2%	40,0%	22,6%	12,9%	34,4%	23,8%	
Lack of internal competence on how to implement AI in our business.	29,2%	22,7%	26,6%	30,8%	40,0%	32,3%	41,9%	50,0%	46,0%	
Decision makers have difficulty understanding what AI is and how it can be used.	12,3%	9,1%	11,0%	11,5%	0,0%	9,7%	9,7%	21,9%	15,9%	
Uncertainties about government legislation and regulations surrounding AI.	18,5%	22,7%	20,2%	7,7%	20,0%	9,7%	12,9%	25,0%	19,0%	
Missing a clear internal digital strategy that includes AI.	21,5%	20,5%	21,1%	23,1%	20,0%	22,6%	29,0%	28,1%	28,6%	
Low experience of making requirement specifications and procuring AI services.	13,8%	15,9%	14,7%	11,5%	0,0%	9,7%	9,7%	15,6%	12,7%	
There is no specific budget for investments in AI services.	13,8%	6,8%	11,0%	26,9%	20,0%	25,8%	6,5%	15,6%	11,1%	
The attitude towards AI is generally negative among customers and the general public.	7,7%	11,4%	9,2%	3,8%	20,0%	6,5%	9,7%	6,3%	7,9%	
Unclear what persons who are responsible for the development of AI within the organisation.	4,6%	6,8%	5,5%	7,7%	0,0%	6,5%	0,0%	9,4%	4,8%	
Staff and managers are unsure/afraid of how AI will affect their work.	4,6%	4,5%	4,6%	0,0%	20,0%	3,2%	6,5%	9,4%	7,9%	
Al technology needs to be more general than today's narrow and specialised applications.	18,5%	18,2%	18,3%	15,4%	0,0%	12,9%	12,9%	18,8%	15,9%	
Do not know	21,5%	15,9%	19,3%	23,1%	20,0%	22,6%	25,8%	0,0%	12,7%	

Figure 9. Question 2 broken down on company business focus

Services respondents seem to perceive a shortage of relevant AI services and suppliers as their main obstacle, while retail and manufacturing find it to be lack of internal competence.

6. Opinions and Thoughts About AI

The third question of the survey was: *"What other opinions and thoughts do you want to share regarding AI?"*. It was an open question on which the respondents had the chance to express themselves freely on the subject AI. In total 18 respondents chose to answer the third question. See all the quotes below and on next page (Figure 10).





AI is completely overrated. There are not yet any functioning systems! (German; Manufacturing)

Also Finance and Controlling will work with AI in the future. (German, Manufacturing)

AI requires that the information needed for decision making is digital. In complex issues that is seldom the case, especially concerning the future, motivation, plans etc. (Swedish; Services)

Today's broadband connection is too low. (German; Services) (German; Services)

Businesses and government(s) should be more pro-active in promoting the prejudice-free and responsible use of AI. (German; Services)

I run a staffing company, and think that the personal meeting with customers and candidates is very important. It is not the same quality in the selection of candidates and it is not possible to build trust with the customer, if one replaces the meeting with digital solutions. (Swedish; Services)

AI is not mature enough in PR and marketing. There are currently only datasets, but no methods to evaluate them purposefully. (German; Services)

We will soon implement AI as part of a product. An obstacle in the procurement of AI is the immaturity about what the concept of AI really means. (Swedish; Trading)

Our service sector - language education – is based on human encounter. Therefore, AI is out of the question for us for the foreseeable future. (German; Services)

We are a small subsidiary of a German group that today uses Monitor and the SAP. As a subsidiary, we have no capacity to develop AI (Swedish; Services).

Management on a smaller scale does not justify AI investments. In our case, AI does not deliver enough increased facilitation, performance and improvements compared to "manual" processing (German; Services)

Often one hears confident statements about AI and its blessings from people who are not even able to define or explain what ordinary (human) intelligence is. AI is undoubtedly on the rise, but the "ordinary" intelligence must not be downgraded or underestimated. (Swedish; Trading)

In our company, AI applications are increasingly in focus for further development. The potential to solve complex processes through AI is infinitely significant. However, at least for now, we still depend on the creativity of real people to tap into it. (German; Services)

Redistribution of profits enabled by AI is an important aspect. However, the question is; when AI makes profits, who will benefit from it? (German; Manufacturing)

= Swedish

Figure 10. Optional free text answers question 3.

= German

7. Summary and Conclusions

The gross population is too small and non-representative to make any general conclusion about Swedish versus German companies, but the response rate is high enough to make a general analysis of the members of the Chamber. Research of non-response bias indicates that individual who chose not to participate, usually have a more neutral or negative attitude towards the research subject than the ones participating. Consequently, respondents may be over-represented by individuals with a positive attitude towards AI, or at least interest in the subject.

Change in AI Usage Until the End of 2021

Swedish companies seem to focus on increasing the usage of AI in the areas of Sales & Marketing and Customer Service, while German companies are increasing usage in Manufacturing and Distribution. However, it is surprising to note that one of four respondents reply that they will not increase the usage of AI until the end of 2021 (See Figure 3). This is the top answer among German companies and in second place among Swedish companies. One explanation can be that the majority of the Chamber's members are importers who do not produce products or services themselves – that it is the producers who focus on using AI to a greater extent than the importers. This hypothesis is strengthened by the results broken down on business focus. Companies working with manufacturing are the ones with the lowest answering rate of "Not at all" (See Figure 6).

Main Obstacles for Increasing AI Usage

The overall main obstacle to increasing the usage of AI services is the lack of internal competence on how to implement AI. On second place comes a shortage of relevant AI services and suppliers on the market. Thirds place differ between the two countries. Swedish companies have the obstacle "Missing a clear internal digital strategy that includes AI" and German companies "Uncertainties about government legislation and regulations surrounding AI" (See Figure 8).

When breaking down the result on business focus, companies working mainly with services have "Shortage of relevant AI services and suppliers on the market" as their main obstacle, while retail and manufacturing reply "Lack of internal competence on how to implement AI in our business". The result indicates a need for better internal AI knowledge and a more precise legal framework. Furthermore, respondents perceive it to be a shortage of relevant services and suppliers on the market (See Figure 9).

The open question on general opinions and thoughts about AI indicates following additional obstacles for implementing AI among respondents: Some companies do not need AI since human interaction and creativity are key business success factors. AI does not still deliver enough efficiency compared with human labour. The company is not digitised enough (have a shortage of digital data). The business operation is too small to justify investments in AI. Other highlighted issues are in the areas of ethics. (See Figure 10).

Overall Findings

There is an outspoken shortage of AI competence among the Swedish and German companies participating in the survey. A recently published Gartner report shows that in only four years the usage of AI among companies has risen globally with 270 % (Gartner, 2019). The lack of internal AI Strategies indicates that senior management has not yet prepared their organisations for an accelerating commercial usage of AI. There is also a gap between buyers and sellers of AI services. Buyers do not have enough knowledge about AI technology to understand the commercial potential of AI. Sellers, on the other hand, have difficulties in packaging and communicating relevant AI services. Most experts agree on that next phase in the digital transformation will be based on AI. Hence, it is important for companies' senior management to educate themselves to fully understand the future business potential of AI. Furthermore, it is urgent for all companies to start up simpler AI pilot projects in purpose to understand the technology better and to involve the whole organisation in the incremental integration of AI in the company business operation.

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