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Dear reader

A warm welcome to the second issue in the Year 2021 of the JPR-Focus.

Again and again, there is talk about the importance of knowledge and experience. The complaint is especially loud when an experienced professional has resigned and leaves. When asked what they intend to do to end this misery, there is often lamentation. Where am I going to get the money? My wage costs are already very high. I cannot possibly pass on these costs to the customers.

It seems that knowledge and experience have a problem. They are important, but cost too much. Where does this come from? What to do?

This paper tries to answer these questions and to show how to get out of the dilemma.

I wish you an interesting read.

Kind regards

Yours Jean-Pierre Rickli

Knowledge and experience - What value do they have?

1. Introduction

In the marketplace, many companies and suppliers look pretty much the same: grey, lighter or darker. The only thing left for them to do is to fight on price until they drop and disappear from the market. Why do a few appear colourful and bright? Because they have and maintain knowledge and experience.

Almost every day we hear or read that we live in the information or knowledge society. Information and knowledge have never been so easy to get. Why then build up and cultivate your own knowledge like a rare plant when everything is so easily accessible, and in many cases free of charge?

The call for knowledge is just as frequent. At events with colleagues and other specialists, there is constant talk of knowledge disappearing. Everyone as a customer has already made the experience that good advice when buying a product and at the latest when making a complaint is expensive, sometimes very expensive.

However, when it comes to joint projects with a company, people talk boisterously about their broad experience and profound knowledge. One should bear in mind the old saying that one talks mainly about what one does not have. Then, the situation is again the same as described before. Neither knowledge nor experience is available.

Why these discrepancies? Apparently, either people have totally divergent opinions or they are not talking about the same thing. The latter is the case.

The following paper is intended to shed some light on this story. For this purpose, a methodology shall be presented on how to assess the worth of knowledge in different professions or functions.

2. Explanations of terms

We have just noticed that obviously, what is understood by knowledge is not the same everywhere. In addition, information and knowledge are often confused or equated. Experience is also not valued or experienced in the same way everywhere.

Therefore, it is advisable to first take a closer look at the terms. This way we can come to a common understanding of their meaning.

2.1 Information

Information is practically all we are flooded with every day. We are literally drowning in it. There is meaningless, irrelevant, superfluous, possibly useful, perhaps useful, meaningful, substantial and important information. Intermediate nuances are also possible. The order given here is similar to the order of the ingredients in food: first the high proportions and last the trace amounts.

This also makes the problem of information clear: setting priorities.

There are relatively simple rules here:

- The louder the advertising around the information, the more irrelevant it is. Just delete it, keep on browsing or simply ignore it. The risk of missing something important is zero. You only have to catch one of the many repeats. Imagine that no one is interested in the super offer and the salesperson is desperate.
- If access to the information is timed, then it is merely a covert advertisement. Delete or ignore if you are not looking for exactly this information.
- Information distribution without a return service is actually the exception. It comes practically only from known and trusted sources. Information given as a gift is an indication of a desired return, which is not always in hard currency. Consider the value of the information for yourself.

When a first sorting, deletion or skipping of information has taken place according to these criteria, then one has certainly chopped off 80 to 90% of the flood of information. It is then possible to devote oneself to the perhaps useful, meaningful, substantial and important information.

Now the work begins. First you have to be clear about what you really need or intend to buy or do in the near future. Sifting through the information left over after the first sorting can be done relatively quickly. But then you realise that the Pareto law already discussed in JPR-Focus 1/19 applies here too. You can get 90% done with 50% effort. For the remaining 10%, a deeper examination of the matter is increasingly necessary in order to be able to file it. Nevertheless, it remains only information. One knows that something like this exists, where it is filed, can retrieve it and make it visible again if necessary.

It is the same with everything on the internet, in books or magazines and newspapers. Everything is just a huge mountain of information. Knowledge is something else. Let's take a look at that now.

2.2 Knowledge

If all we have access to is information, then what is knowledge? What is the much discussed and praised knowledge transfer? Where then is knowledge stored? Many questions and generally few answers other than a few marketing platitudes. Here are a few possible suggestions.

- Knowledge is processed information
Here is an example to illustrate the difference. We have the information about the meteorological situation where we live: Temperature, clouds, weather report, etc. We are planning a trip to a nearby place, about 1000 m higher. Without knowledge, this information is pretty useless. The phrase: I know that today's temperature is so and so many degrees is just a delusion. It is not knowledge, but merely information stored in our heads. Only with the help of our knowledge about the influence of the altitude difference on the temperature, our experience about the correlation of the weather conditions in both places and experiences from previous trips, we can decide about the appropriate clothing and the right route.
- Knowledge is stored in the mind
We saw this in the previous example. The processing of the information takes place through the knowledge already stored in one's head, through the experiences and the lived moments. All factors vary from person to person and are therefore highly personal. We can document them to relieve our memory. Yet, only we know how to understand the records and how to proceed.
- Knowledge transfer does not end in handing over a book or folders.
We often read that this expert has documented all her knowledge in her book or that companies have documented her knowledge in corresponding folders. This may be true to some extent on the author's side. However, the word "all" must be put into a more relative perspective. The word "whole" refers only to conscious knowledge. What one takes for granted and what one does not know that one knows remain hidden. Their share varies from person to person and from discipline to discipline. But it can be considerable. For the reader or the recipient, however, the whole thing is just information. It only becomes knowledge transfer when the teacher in the general sense personally helps the students to process this information into knowledge.

Furthermore, a small distinction in knowledge must be pointed out. In discussions about this topic, the word "know-how" is often used, which means something like "know how to do". Another form of knowledge, much less known today, is "know-why".

The "know-how" or "know how to do" is what is mostly passed on today in schools, in professional and lifelong education and in trainings. It is primarily about learning how to use equipment, how to operate machines, how to perform calculations, how to write or speak, how processes work or how to serve, advise or look after customers.

In most cases, therefore, it is a matter of training skills that can be performed sooner rather than later by artificial intelligence. Science today is also focused on the "how". This is the world of cooking recipes.

The "know-why" or "knowing why" is practically unknown. The word creation happened in my former department. It is primarily about giving the background for many decisions in "know-how". Many decisions in procedures or in calculations have a seemingly arbitrary aspect or are at least considered illogical to the outside observer. The reason for these decisions is usually quite logical and well-founded. There were experiences, studies or investigations behind them at the time, which are still rotting in forgotten archives today in the best case. Some procedures still go today through a certain office only because the expert was there. Today that person has long since retired and has never been replaced. Still, nobody is aware of it now.

The difference can be illustrated with the following story.

Today is Sunday, the family has decided to make the famous meatloaf according to grandmother's recipe. So, the mother is on duty today and digs out the recipe written by her mother and gets at work.

After a while, the time has come to put the roast in the oven. The whole family stands around, admiring the work before it goes into the oven. Then suddenly the father asks: "Why did you cut both ends and put them on the sides of the roast?"

The mother is not really sure. My mother always did it that way and also wrote it down. Once again, the roast was a delicious thing. Reason enough to call the grandmother and report on the success. As an aside, they also ask about the reason for the cut ends. The grandmother answers the mother: I do not know; your grandmother has always done it this way and it has always worked.

Well, luckily the great-grandmother is still around and her birthday is soon. During the congratulations, she is casually asked about the reason for the cut ends. The still very spry woman spontaneously replied: "I do not know why you do that. I did it because our family was quite big and my pots were too small. So, I had to cut off the ends and put them on the sides of the roast. I could have made the roast thicker, but the cooking time would not have been right."

Unfortunately, in many companies the great-grandmother can no longer be asked, nor can the grandmother. The answer to the why therefore remains a well-kept secret.

We basically distinguish between three categories of knowledge.

2.2.1 The general knowledge

This is the knowledge that one should primarily get in school as a child or a teenager. I emphasise the subjunctive, because today, the focus is on building up skills on stock for a hypothetical career choice. This in spite of its primary task to help children and young people develop into adults and autonomous social beings.

More in-depth basic knowledge is of course also offered in secondary schools, in training and further education as well as in various private and public learning institutions. This also enables lifelong learning in general knowledge.

This basic knowledge can also be selective, depending on the inclinations identified in the young people or the new orientations discovered later. There is more mathematics, natural sciences, languages, humanities, craftsmanship, etc. This knowledge is not yet specialised knowledge, but merely the setting of focuses.

2.2.2 Professional knowledge

This is the knowledge that is necessary for a professional discipline or for a specific profession. This knowledge is both practical and theoretical. It is acquired either in vocational schools, in practice during apprenticeship as well as in higher and secondary schools.

In the course of the professional practice, conferences are also very popular places where one can get information for the further development of this knowledge. In addition, if one pays attention, one can also get specific knowledge thanks to the exchange with colleagues.

Particularly for professions where there is a great need for skilled workers, learning institutes also offer the corresponding expertise. There, career changers can expand their knowledge.

2.2.3 The specific knowledge

With this knowledge we enter a completely different field. This is the specific knowledge about the company's products, about the production methods and processes, about the difficulties and about the successes. This is the company knowledge.

While the other two types of knowledge - general and professional knowledge - can be acquired on the basis of external information, specific knowledge can only be acquired internally. It is the sum of the knowledge of each employee, which is based on the calculation and production specifications, product development and field experience, as well as the different experiences of each individual.

When an employee leaves the company, his or her knowledge is completely lost for the company. The replacement will come with a different set of general and professional knowledge. Possibly, if she or he already has a working experience, with a completely different set of specific knowledge. She or he will have to acquire the internal knowledge of the company. This may take a lot of time and cost the company quite a lot of money.

2.3 The experience

Experience is the sum of our lived moments over time and how we have emotionally processed them. Hence, it is highly personal and unique.

As we have anticipated, it plays an essential role in knowledge. On the one hand, it influences the way we process the information into knowledge, i. e. in its build-up. On the other hand, it is also an integral part of the content of the knowledge itself, as part of its build-up process. Knowledge is thus, inseparable from the person's experience.

3. The significance of knowledge in companies

3.1 Where does it come into play?

All too often, knowledge is primarily associated with research and development or with innovation. That is correct. Knowledge is of the utmost importance there. But there is hardly an area in a company today that can do without knowledge. Such areas are already automated. Of course, not everywhere the same amount and above all not the same type or mixture of general, professional or specific knowledge is expected. This statement also applies to every company, industry or sector.

Knowledge is necessary

- In the management
- In the service
- In the sales
- In the research and development
- In the production
- In manufacturing
- In the personal department
- In the accounting
- In the design
- Etc.

3.2 How is this knowledge valued?

Knowledge is practically not valued, but only rewarded a little. This is primarily the case for general knowledge and especially for professional knowledge. Depending on the professional or school qualification, the basic salary is adjusted by a few percent.

The seniority bonus is another way to reward knowledge. Again, it is not really valued, but rather a thank you for loyalty.

Knowledge also appears in the annual performance evaluation. There, it is usually recorded rather qualitatively as large, medium or small, and as one criterion among many others. However, it does not have an assigned value.

As we can see, knowledge does not get a proper real value except in the choice of the "tariff sheet". We will see what this means in everyday life in the next chapter.

3.3 Where does today's practice lead?

To understand this, we need to go over the principles of accounting and financial planning.

Every company keeps accounts in which the flow of money in and out is recorded. Such bookkeeping is also a legal obligation. To simplify the overview, these cash flows are summarised in so-called accounts by type. There are pure cost and revenue accounts as well as mixed forms such as the bank account, where in and outcoming cash flows are recorded.

Two statements are used to check the finances: the balance sheet, which shows the change in the financial situation, and the profit and loss statement, where all monetary flows of the past year are added up.

For financial following in the current year - controlling in technical jargon - a balance sheet and a profit and loss statement are prepared with the values to be expected; so-called budgets. This enables ongoing monitoring, the identification of deviations and the timely initiation of corrective measures.

What are we noticing? In none of these documents and processes the word "knowledge" is to be found. Knowledge and experience therefore have no financial countervalue in a company. If all the specialists leave the company, this will not appear in any financial records. The company, however, remains without knowledge and is thus hollowed out. Its continued existence is seriously endangered.

Much worse! Wherever knowledge is valued, even if only indirectly, it contributes to the increase of the accounting position "personnel costs": Salary step for better training, seniority, qualitative assessment of knowledge, training. Thus, in accounting terms, the company is even better off after the specialists leave! Knowledge for managers with a planning horizon of one quarter is thus only a cost factor.

3.4 The hidden costs

Mistakes are usually not or very insufficiently recorded and evaluated. In practice, they only occur when external costs and/or material or parts costs are incurred, i.e., where a specific invoice is generated.

As most errors can hardly be quantitatively assigned to a causal source. They are simply reflected in the accounts in higher administrative costs, in higher service costs, in higher failure or reject rates or simply in a higher workload.

Such mistakes happen wherever knowledge is required, thus, as we have seen above, practically everywhere in the company. Only their financial consequences may be different.

If we can relate the worth of knowledge to the value of these hidden errors, it would be possible to account for these two things. This is the task of the methodology described in the next chapter.

4. The evaluation methodology

4.1 The decisions

My own experience as a manager in industry and as a coach has shown that:

- We all make decisions, day after day, no matter where and in which hierarchical position we work. Only the number of decisions, their financial consequences and their time frame are different.
- The quality of the decision-making process of all employees in a company depends to a large extent on whether internal and specific knowledge is available and retrievable or not.

Who makes decisions? And which ones?

In order to be able to answer these questions, the tasks and duties of all hierarchical levels and functions were analysed and their respective decision-making profiles were worked out. These results can be summarised as follows:

- Above the level of head of department, decisions are predominantly to exclusively strategic; below this level, they are predominantly operational. At the head of department level, decisions are balanced between strategic, tactical (medium-term) and operational.
- The decisions of the functions in product and customer proximity (manufacturing, service, sales, complaints, etc.) have a direct influence on the success of the company. They ensure the inflow of capital in the current business year.
- The other functions primarily make decisions with indirect influence on the current business. Since the financial scope is rather limited and the consequences of the decisions are not directly quantifiable and verifiable, their importance is usually underestimated. However, they often influence the behaviour and capacity of the operational staff to perform its work and thus contribute to the success of the business. These decisions should secure the business basis.
- The decisions of operational staff are strongly behavioural. This is especially true for the staff at the lowest levels, whose contact with the clientele is the most intense. They result from the many human encounters and are therefore also very numerous. They are only analysed in exceptional cases and are usually not considered decisions but normal and professional behaviour.

4.2 The path to a decision

This was the topic of a study conducted with a student from the MBA school in Lausanne. The decision-making systems of various people at all hierarchical levels and functions were analysed in detail in an interview. The results showed a fairly consistent decision-making behaviour. For all of them, regardless of the position in the hierarchy and on the function or the type of decisions, the following questions are consciously, unconsciously or routinely gone through:

- What is the amount of money involved?
- What is the time horizon?
- What is my reference value?
- Is this decision mine?

For the first question about the financial scope, three cost categories come into consideration for all: the direct allocated costs, the direct non-allocated costs and the indirect non-allocated costs. The first part is usually the visible and, like the iceberg (See Figure 1), the smallest. The other two are invisible and the larger. They are the hidden costs.

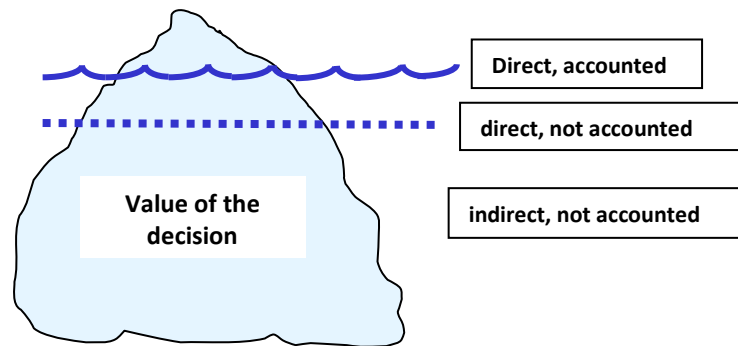


Figure 1: The value shares of the decision

People with a lot of knowledge and experience have a very good idea of all the cost components and take them all into account in their decisions. For people with less knowledge and experience, the indirect, not accounted costs are often forgotten or only roughly estimated. If the staff is frustrated, has no interest in the company or has already resigned, the two non-allocated parts are even deliberately ignored.

The answer to the second question about the time horizon is about two things. On the one hand, a longer time horizon can increase the invisible unallocated part of the costs of the decision, on the other hand, it indicates whether or not it is an operational or a strategic matter.

Interestingly, each person can give a clear reference value, no matter what position they are in. The reference is specific to each position, such as the budget, the turnover, the defined competence, the payroll, the value of the scope of supply managed. The value itself, however, varies from person to person, often as a result of their experience and knowledge.

The answer to the fourth question follows the results of the first three. In the case of persons with insufficient experience and knowledge, a tendency towards excessive delegation of responsibility upwards or downwards is possible. This can lead to conflicts, overburdening of other positions and unnecessary loss of time. This also increases the hidden costs.

4.3 The worth of a decision

This is indeed the nut to crack!

Although the picture at first glance is very inconsistent, even contradictory, the common denominator could be found with the reference value. Although the reference figure is very different, the decision-making behaviour in relation to this figure is quite consistent.

This made it possible to give an order of magnitude for the maximum value of a decision. This study showed that the maximum values (sum of all three parts) of a decision by an experienced and confident person are as follows:

- 30% of the reference value for a strategic decision
- 10% of the reference value for an operative decision

Lower figures apply to a cautious or inexperienced person.

One cannot do much with these maximum amounts alone. Such decisions are made rather rarely, but many others are of lesser value. We then opted for a quadratic distribution of the value as a

function of the frequency (see Figure 2). This distribution is independent of the function and position of the job. It also applies to both types of decisions, operational or strategic. We find that the value of the decisions with the average frequency (50%) is 15% of the maximum decision value.

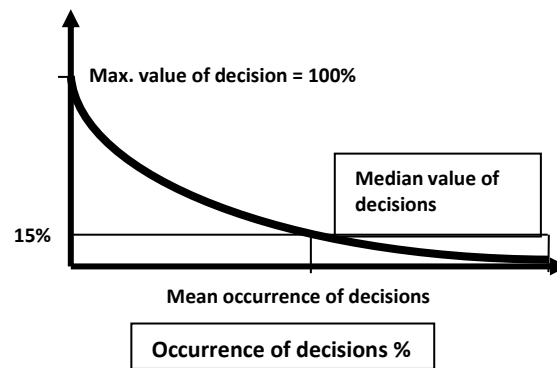


Figure 2: Worth of the decision with median occurrence

We have therefore:

- For a strategic decision: 30% x 15%, or 4.5% of the reference value
- For an operational decision: 10% x 15%, or 1.5% of the reference

4.4 The quality of decisions

Everyone makes mistakes. Everyone makes good and not so good decisions. Percy Barnevik in his heyday at ABB put it this way: "a rate of 70% good decisions and 30% not so good is reasonable and acceptable. The prerequisite for this is that the decisions are made quickly and that one has learned something from the less good ones and does not repeat them".

Today, teamwork is the be-all and end-all in the professional world. Hardly anyone manages alone and stands alone for the results. Poorer decision-making quality will therefore inevitably affect the work of the other team members. They will have to care for the balance. This increases their workload and their own decision-making quality will suffer, as will the overall results of the team. According to this method, these costs are to be considered as "directly allocable" and are thus considered.

We can then calculate the value of knowledge and experience if they increase the hit rate of a person's good decisions by one percent from 70 to 71%. In other words, it would be if one decision out of 100 is better. Let's take a look at this.

According to the current literature, we can assume that 100 decisions per day are made in a back-office and 300 decisions in a front-line position.

Improving this hit rate by one decision in a hundred over a period of 3 months - equivalent to a usual introduction period - and an average number of working days of 20 days means that:

- $300 \times 20 \times 3 \times 1\% = 180$ decisions made by a person in the front-line position

and

- $100 \times 20 \times 3 \times 1\% = 60$ decisions made by a manager or a back-office position,

which outcome could be better with more knowledge and experience.

Let us now look at three examples in the operational area to get a rough idea of the costs involved.

Example A: Service staff in a restaurant. In the team, 5 people work very closely together and influence each other. Thus, the performance and decision-making quality of each individual strongly depends on that of the others. The annual salary is Fr. 40'000 and each team member has a turnover of Fr. 1'700.

Example B: Process engineer in the field of investment goods, works in a team with two other engineers and coordinates with customers and suppliers. However, each team member has his own area of responsibility. The value of the plant is 1.1 million Swiss francs and his decisions can have up to 100'000 Swiss francs of consequences. He earns Fr. 84'500 a year.

Example C: Operational manager in the technical area with management responsibility for 40 people. The operational budget, which he directly influences with his decisions, is Fr. 240'000. His annual salary is Fr. 150'000. Because of the size of the management span, he works closely with his deputy.

The added value for the company, which corresponds to an improvement in decision quality of one decision per hundred during the introduction phase, can thus be calculated. Since we are in the operational area for examples A and B, the number of better decisions over this time is 180 and 60 for example C as the person responsible is located in the back office. The value of the mean decisions in relation to the reference figure is 1.5 % for all of them.

The results for the three examples are summarised in Table 1.

These numbers speak for themselves. The cost impact of one decision in a hundred is enormous. If you compare it with the annual salary, you can see that a lack of knowledge and experience can already cause great damage in the introductory phase. No surprise that companies with high staff turnover have problems.

Examples	Reference (Fr.)	Number of directly infl. Persons	Worth for 3 Months (Fr.)
Example A	1'700	1 + 4	22'950
Example B	100'000	1	270'000
Example C	240'000	1 + 1	432'000

Table 1: Worth of 1% better decisions during the introduction period

We also see that for so-called "operational positions", the influence of knowledge and experience can be great. This is even more so because these positions directly influence the flow of money with the outside world, while for the others, the internal costs are more significant. For a company, however, the external cash flow is of greater importance.

Of course, all the initial figures are somewhat arbitrary, they are, nevertheless, realistic in their order of magnitude. The aim of this work is not to achieve scientific accuracy, but to get an idea of the magnitude of the costs incurred. I recommend reflecting on your own figures and using them according to this methodology. In this way, everyone can produce figures specific to themselves and their company and confront them with the reality in their business. Surprises are the order of the day.

Thus, we can enter an income value in the other side of the account "knowledge". This account is now no longer a pure cost account; it has become a cash flow account.

5. Ways for improvement of knowledge

We have just seen that even a small improvement of 1% in decision quality can bring large financial amounts. This frees up enough funds for improvement measures, the costs of them are paid back in a short time.

Which possibilities are available?

That depends on the nature of the lack of knowledge.

When it comes to general or professional knowledge, external courses are generally a good option. For general knowledge, something is available almost all the year round. In the case of professional knowledge, you may have to wait a few months until an appropriate offer is available. Hesitation and waiting are hardly worthwhile. The price for such training is out of proportion to the expected benefit.

In many cases, the problems are not really with general or professional knowledge, but with its specific application in the company. In this case, one should consider ordering an external course that focuses on the specific applications and that is offered to all people involved in the company. For some a welcome refresher, for others the discovery of new possibilities or simply further training.

For certain positions, coaching or mentoring may be the solution. The decision on the method as well as whether internal or external is made by the proportions of necessary knowledge - general, professional, specific.

Where highly specific knowledge is required, internal training offers great advantages. It can fill gaps in knowledge, provide a welcome refresher and also an update on the latest experiences across the company. This also fulfils an important condition: knowledge lives and is lived.

A prior knowledge management analysis is of great help in these decisions as well as in their preparation.

6. Summary

The various findings from this report can be summarised as follows:

- Knowledge is personally processed information together with already existing knowledge and one's own experiences. Knowledge therefore only exists in the head of each individual.

It can be documented as information for others, who then have to process it themselves into knowledge.

- Of the three types of knowledge, only the "specific knowledge" makes the difference between companies. It is intrinsic and cannot be obtained externally. Every staff departure means a net loss of knowledge that cannot be completely replaced because it is unique to each person. Building up a replacement is costly.
- Today, knowledge and knowledge development are only considered as cost items in accounting terms. The methodology presented here makes it possible to evaluate the changes in knowledge and thus also to enter a realistic value on the other side of the account, the income side.
- The examples shown demonstrate the real value of knowledge. This value is significant and makes many measures profitable and justified at once.
- Internal as well as external support measures are possible. For the right choice, a knowledge management analysis should be made. It then provides the basis for anchoring and developing knowledge in the company.

Yours Jean-Pierre Rickli

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