# Evaluation of the agricultural advisers' knowledge and assessment of the entrance expectations coefficient

## *Evaluace znalostí zemědělských poradců a stanovení koeficientu vstupních předpokladů*

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**Abstract:** Agricultural consultancy is the only way how to reach the money from the governmental or European sources for the most of the farmers. Therefore, education and competences of agricultural adviser forms one of the direct determinants of farmers economical success. This fact produces demand of the agricultural advisers' knowledge measurement and press for their increasing. The AAC (Agriculture Advisory Competency) is a measurable value indicating the adviser's knowledge and competency. Its purpose is to show the expected quality of potential consultancy services depending on the agricultural adviser's education, experience, frequency of the knowledge improvement and past outcomes of his/her work. If the existence of the MAP (Management Advisory Portal) overviewing all adviser's activity and managing the complex educational process including the knowledge testing is supposed, the value of the AAC can be assessed and actualized continuously, based on the fixed criteria. The assessment of the multidimensional model for the initial value calculation and its following actualization depending on the events invoked by every adviser individually or coming from the outside was the subject of the research.

**Key words:** agricultural consultancy, AAC, MAP systems, new technologies, eLearning, testing

**Abstrakt:** Zemědělské poradenství je pro mnohé zemědělce jedinou cestou, jak dosáhnout k penězům ze státních či evropských zdrojů. Vzdělání a schopnosti agroporadce tak tvoří jednu z přímých determinant ekonomické úspěšnosti zemědělce. Tato skutečnost vytváří poptávku po evaluaci schopností agroporadců a tlak na jejich zvyšování. AAC (Agriculture Advisory Competency) je měřitelná veličina udávající znalosti a schopnosti agroporadce. Jejím smyslem je ukazovat očekávanou kvalitu potenciálních poradenských služeb v závislosti na vzdělání poradce, jeho zkušenostech, frekvenci doplňování znalostí a předchozích výsledků jeho práce. Za předpokladu existence MAP (Management Advisory Portal), který má přehled o veškeré činnosti poradce a řídí složitý proces jeho vzdělávání včetně testování znalostí, lze stanovovat a průběžně aktualizovat míru AAC jednotlivých poradců na základě daných kritérií. Předmětem výzkumu bylo stanovení vícerozměrného modelu pro počáteční výpočet hodnoty AAC a metod pro jeho následnou aktualizaci v závislosti na akcích, které jsou vyvolávány buď individuálně každým poradcem zvlášť, nebo přicházejí jako podněty zvenčí.

**Klíčová slova:** agroporadenství, AAC, MAP systémy, nové technologie, eLearning, testování

Czech agriculture have had to face a lot of problems after the Czech Republic became the member of the European Union. Not only small holders, but also big co-operative farms battle against these problems. These problems include strong competitions with the farmers from the surrounding countries and the difficult system of quotes, restrictions, regulations, directions and other rules tying down the free market and restricting and regulating business in the agricultural sector.

One of the methods how to improve the situation of an agricultural business is to take advantage of the possibilities provided by financial flows that form approximately a half of the European budget.

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However, the orientation in the complex structure of European funds which various subsidies, compensations, redresses and subventions can be taken from is very difficult and hardly any farmer can orient perfectly in the mentioned problems.

Having only limited time possibilities, Czech farmers make demand for the consultancy services facilitating orientation in these problems (Andrýsková, Mišovič 2005). This gave birth to the new business activity – agricultural consultancy, thus consultancy in the financial matters connected with agriculture.

The task of agricultural advisers is to facilitate the access to financial resources of the European funds for their clients – agriculturists. They have both to have a full knowledge of the European grant policy and also to know about all possibilities of gaining the European money. The next essential capability is to use this information for the needs of the particular farmer turning to him for help (Jeníček 2006).

The orientation in the complicated, matted and continuously changing system is very difficult even for the specialist, for whom the agricultural financial consultancy is the primary scope of employment. Kuhn (Kuhn 1997) followed up on the idea that just in the areas where books are still kept, together with scientific papers or without them, as the motive power of scientific communication, the professionalization routs are not still designed with such expression that even a laic can afford following the progress in the advisory area by reading the original scientific works. Therefore it is suitable to consider the information and communication technologies (ICT) possibilities. ICT nowadays is a tool helping practically in all areas of human activity. Thus the demand for the MAP – Management Adviser Portal – comes up. We have to consider agricultural advisers as participants of the changes pertaining their flexibility (Sampson, Norris 1997). The goal is to design a system, whose using will lead to the improvement of advisory methods and didactics.

## MATERIALS AND METHODS

The goal of this paper is the classification, analysis and measurement of the advisory expectations. Up to now, there is no generally accepted complete theory, but a lot of interesting investigations and theoretical ideas on how advisory processes are made up of single principles and how the advisor's capabilities could be successfully measured. The Agriculture Advisory Competency (AAC) is a measurable value that supplies information and determines the specific knowledge and capabilities of so-called agricultural advisors. The AAC represents mathematical and theoretical indices that are used for knowledge measuring and capabilities of agricultural advisor. How could this rate be expressed? It is more or less generally accepted to select a way of work. To answer the previous question, we draw on mathematical and statistical methods because it seems to be necessary to define and present a coefficient pertaining the AAC. By the time we started to discuss the way of determining the AAC multi-dimensional models had been chosen. We shall mention the initial settings of the AAC, the preliminary hypothesis, the way of calculation and determinations of key factors and weight codes.

### Advisory activities optimization with the help of ICT

Information and communication technologies have a very wide application in agricultural consultancy, although not all of their possibilities are going to be used. Anyhow, agricultural adviser uses ICT for his/her work, he/she always has to remember that it is just one of many possible tools facilitating his/her work. In this context, using of ICT is not the goal, but just the means for reaching the goal – quality consultancy.

A.G. Watts (Watts 1998) works with four basic models of integration of ICT in consultancy. We consider these models to be suitable for using in agricultural consultancy as well.

- **Independent model** of using, when technologies are used separately from other consultancy offers.
- **Supportive model** of using, when adviser speaks to the client – mostly shortly – right before working with technologies and/or after its finish.
- **Integrated model** of using, when technology becomes the part of other consultancy services.
- **Progressive model** of using, when the technology is used before providing following consultancy services and/or after it.

Taking into account that the client of agricultural consultancy process, consequently farmer, probably is not going to be the direct user of ICT, all communication with the MAP is going to be the task of agricultural advisor. From the Watts model mentioned above, the most suitable one is the very last – progressive way of using ICT.

Let us show the relations among the participants of the agricultural consultancy process in synoptic diagram (Figure 1).

In the consultancy process, we can find relations among

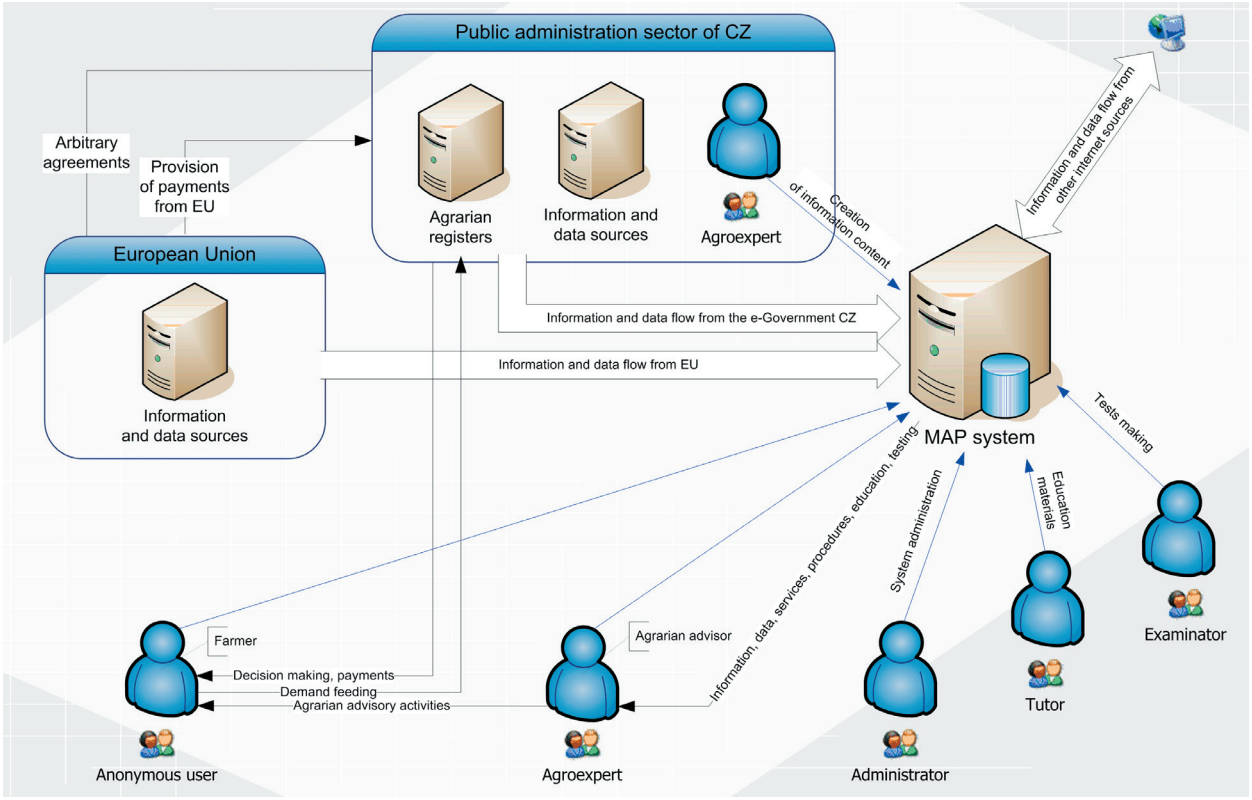


Figure 1. Participants of agricultural consultancy process

– adviser
– consultancy service tool
– client

## Improvement of consultancy competences with the help of ICT

The goal of the educational process realized with the help of the MAP is to give to the individual, equipped by quality information, the competence, allowing negotiating with sobriety and on the base of understanding of the client needs to maximize taking advantage of financial resources offered by the European funds. Education should further lead to the progress of personal possibilities and gained competence. Jeníček (Jeníček 2006) stresses that there is added one more to the traditional production factors, which is just information. It is a relatively new phenomenon, which will surely cause changes in economic theories in future.

ICT are just the helper of the adviser, they cannot (and should not) stand for him/her in situations managed best by the adviser. ICT should be used in cases where they are better, more efficient and actual, e.g. in some cases of searching for the information. Using them saves time, which can be devoted to the advisory interview or actualization of advisory materials. In the literature of James Sampson and Deborah Norris (Sampson, Norris 1997), there is mentioned the enumeration of five relations that cause the use of ICT going astray, therefore it is necessary to respect:

– ICT should not replace other kind of consultancy services, where these services are better
– Using of ICT should be bound directly to the advisory process
– We should approach using ICT critically and with focus of our attention to the needs and actual situation of client
– Using of ICT should not accelerate so much, that advisers will not be able to keep the overview of the advisory system functionality
– ICT should not be overused as an universal tool for solving the client's problem

In the frame of the whole-life career progress and expansion of agricultural adviser competences, the attention is focused to learning the abilities allowing the individual to be able to continuously watch himself, his qualification and the potential of personal progress due to the progress and changes of social possibilities and needs.

It is obvious that even good information system or portal, used in a wrong or not proper way, means decreasing of the consultancy service quality, whereas an intelligent adviser can by various ways compensate

eventual embarrassments in design, components, properties or pedagogy (Foltýnek, Malo 2004).

## RESULTS AND DISCUSSION

### Conception project of the solution model

The basic point for realization of the MAP (Advisory Management System) was of the creation appliance that would provide internet consultancy in the area of agriculture independently of place and time. Advisory service is considered as a custom-oriented process for which there is constructed a special web portal system that draws on the contemporary web technologies. The main goal of the MAP system is to provide non-stop advisory services in the area of agriculture. The opening part of the investigation had analytical character and was aimed for global analyzes in agricultural information and data sources, analyzes of the advisory portals, contemporary web standards and workflow architectures. The basic conception of the MAP root was built on the mentioned principles. First initiatory requirements for the whole system must have been determined in the term of functionality and processional methods (Andrýsková, Mišovič 2004). The conception of the MAP was created on output basis and implementation drew on this conception in final periods of the project.

The project was investigated in the incremental way. The first basic root of the system was implemented according to the designed functionality and then the particular modules were gradually subjoined to the testing operation. Further developments of the model were flexibly implemented in the form of individual modules (like the module of information and data sources, the document module, the legislative module, the module of statistical investigation, etc.). In this way, the data base was also designed suitable for the project. The implementation of single applications was made up with respect to the processional principles and the defined conception.

### Thematic orientation of the content

The MAP system is characterized by both services and processes that support and own information content. There are many of ways how the orientation of web portals should be classified. Today, the main factor pertaining design of the content part is the so-called thematic orientation. Due to the definition of the term, we could classify web portals as (Andrýsková, Hřebíček 2005):

– HBMP (Horizontal Based Management Portal)
– VBMP (Vertical Based Management Portal)

The vertical principle has been chosen for the MAP because the VBMP thematically concentrates on the

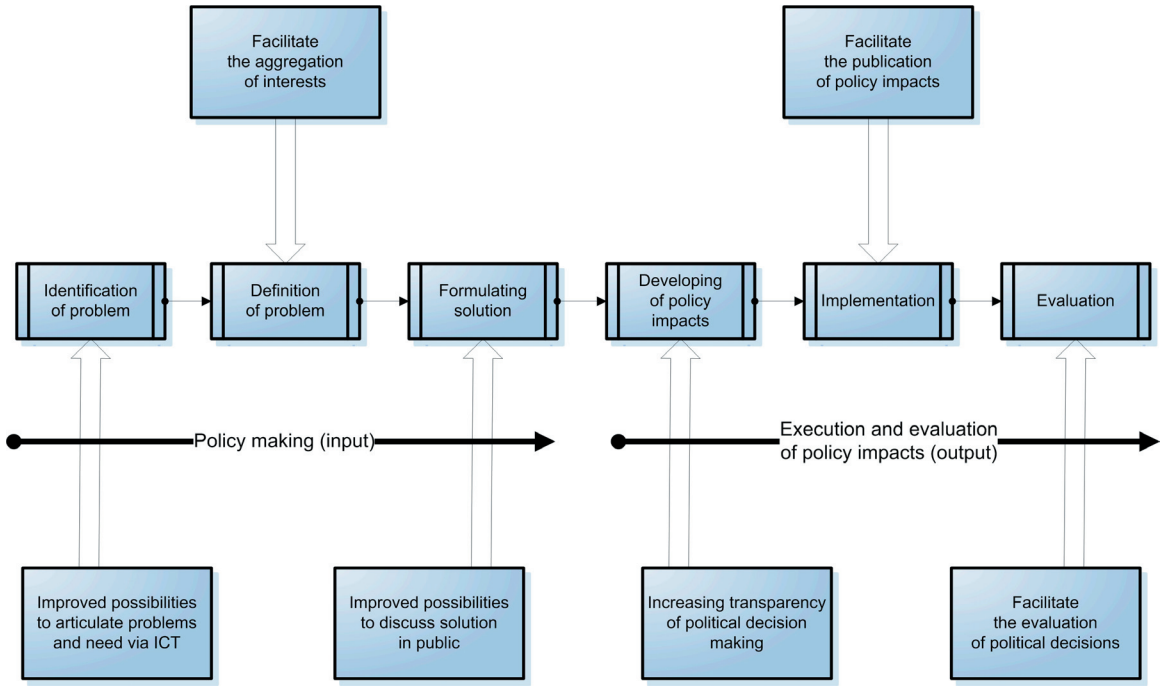


Figure 2. Participation in advisory activities
Source: ePrelude (2006)

specific group of users (agriculturally oriented) in contrast to the HBMP. Most activities are subsequently derived from the MAP themes.

**Policy making process**

Figure 2 shows process of agrarian portal creation and the potentials of using ICT during the whole decision making process with the objective to deepen the public participation. For successful adoption of ICT in the MAP, it is important to have in mind the whole policy making process. The activities facilitate and broaden the participation of public (citizens), state administration and businessmen (Andrýsková, Hřebíček 2005). Only if the input given by the citizens, businessmen and public administrators is methodically structured, it can be used to improve the development of policy impacts. The MAP is able to support these processes and the whole policy making process uses the following objectives:

– Increase the possibilities for citizens to participate in the policy (business or services) making processes (facilitating, broadening and deepening participation).
– Increase democratic legitimacy of political decision making (improve the responsiveness of the political system).
– Improve regulatory policy (business or services) decisions.
– Increase the quality of public services and regulatory compliance.
– Increase the transparency of the policy making process.
– Decrease administrative costs and improve the design of organizational procedures that make the use of ICT appropriate.

**Technological conception**

The MAP system might be specified as an application set representing individual modules. With reference to the specification, the most acceptable method for the project solution is to use the incremental way of implementation. The integration and extending of the single modules should evolve the functionality of the whole system. Project supposition and possibilities of the MAP computing could be evaluated in the initial phases. The following phases can deal with implementation of the management processes (like administration of user's roles, data examination, access controlling, etc.). Last phases of the MAP implementation might design a user-friendly interface. The optimal system solution represents three-level architecture consisting of:

– Data layer (DL)
– Application layer (AL)
– Presentational layer (PL)

Data layer is the basic point of the MAP and it is represented by the relational database. Fischer (Fischer 2005) deals with this idea and defines Data Access Layer in the principles of the workflow. The middle part of the MAP is made up of the application layer that communicates and processes the information between data and presentational layers. We can imagine the layer as a root of the MAP that must be solved modularly to guarantee the flexibility of the level. The main reason for this fact is variability in demands on the layer.

The upper-most level of the advisory portal is constructed according to the presentational layer whose functions are mainly made and used for communication. This leads to the conclusion that the portal communication signifies data and information flow between the system and users. This process seems to use potential of web browsers (so-called thin client) and the MAP root functions.

It is more or less generally accepted that the three--level architecture represents ideal method for creation of the open and flexible MAP, but Fisher (Fisher 2005) distinguishes between three-level and high-level architecture, extended of data flows. The advisory portal should be design as multi-level technological system that integrates processes, applications and data. It should constitute an integrated background ensuring the uniform communication channel for all participants of the agrarian activities. Portal technologies allow unique view of distributed data, global management methods, process automation. To realize the electronic data exchange we need the necessary medium providing transactions – Internet.

**Functional architecture of the MAP**

The main motivation for this chapter is to find an answer to the question which modules should be involved in the MAP conception. The MAP is made up of a few modules that are influenced by the designed functionality. Looking ahead a little, we will describe the basic module characteristics. Generally, we can distinguish between the primary and secondary functionality modules. Primary modules present the relevant portal services (like the management and administrative module, the test module, advisory services, the important information, the document module, etc.). Secondary modules are logically the

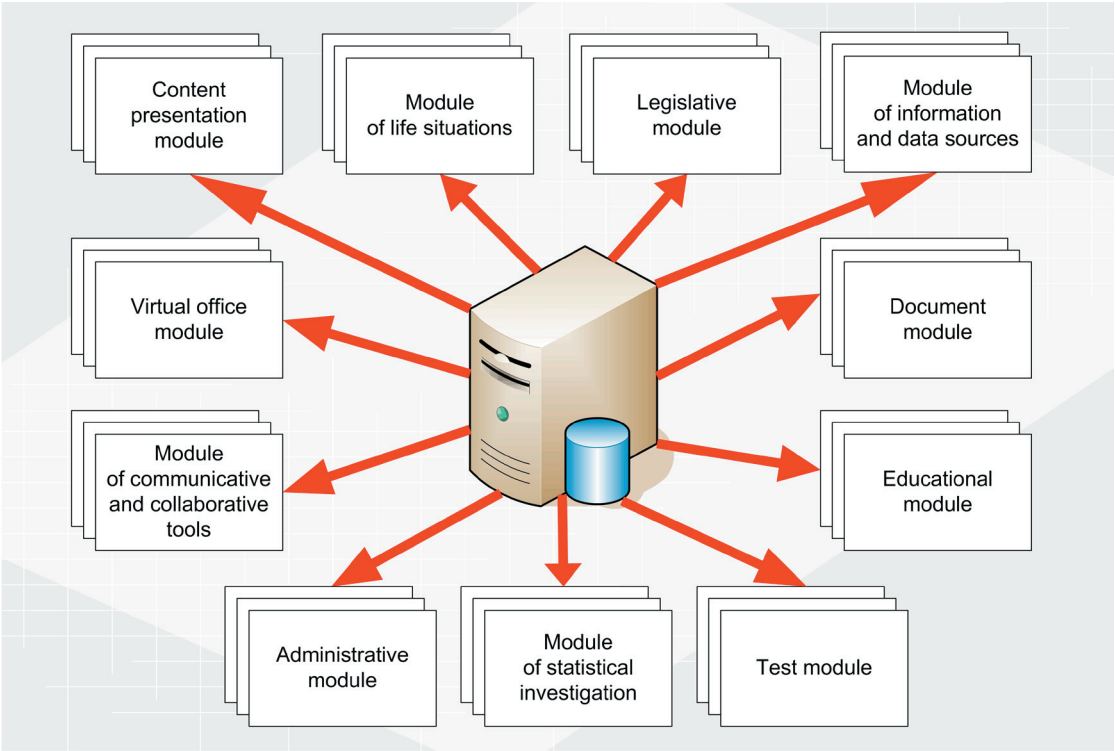


Figure 3. Basic modules of the MAP system

separated and placed in separated part of the portal. They contain services like statistical investigations or public inquiries as a feedback. Basic modules can be distinguished according to the characteristics, functions and services they could provide (Figure 3).

***Administrative module*** denotes the way of whole system management. These applications facilitate user activities controlling, definition and management of user roles, security and other services for correct system run controlling.

***Module of communicative and collaborative tools*** consists of basic applications for the synchronous and asynchronous communication among users, administrators and agrarian experts. The MAP disposes applications like the Electronic Registry, the Discussion forum and the E-mail client.

***Virtual office module*** represents advisory services for farmers that are provided independently of place and time. It represents a whole complex of services, rules and special instructions made by agrarian experts.

***Content presentation module*** publishes the actual information and data sources from the database. These functions usually enable to automate the process of information presentation from other internet sources without manual up-dating by administrator. Web robot system downloads internet data automatically from various sources and publishes them at the portal.

***Module of life situations*** might be the typical case of administrative and advisory procedure. Term life situations stands for generalized instructions, procedures and advices and tell farmers how to go through official administrative channels and how to communicate with the specific institution. In our opinion, this signifies an important starting point for farmers demanding for the individual EU grants.

***Legislative module*** forms essential part of the MAP for agrarian area. Legislative catalogue consists of the whole agrarian Czech and the EU laws. According to the subject classification, there are also the EU Commission directives and regulations.

***Module of information and data sources*** represents the main content part of the MAP as the electronic way to the internet world of information. Therefore, the module is oriented on creating links to other agricultural oriented places of the Internet.

***Document module*** serves the possibilities how to get the needed forms and documents in a very fast and simple way and in the electronic form. Farmer could also download there all necessary electronic conceptions, methodical handbooks or formations in printed forms.

***Educational module*** contains education materials in the electronic form. Farmers are able to get the necessary knowledge via eLearning. Education materials are aimed at agrarian administrative procedures

and principles and should be completed with tutor advices of agrarian experts.

***Module of statistical investigation*** represents applications for the access frequency checking and public inquiries mentioned above, statistical investigations of test results and exploitation measurement of education materials.

***Test module*** is created by the separated applications pertaining testing of knowledge learnt through the electronic way of education. The test module gives necessary information for the AAC value assessment and will be described in the following chapters.

## Principles of testing in the MAP system

The test module in the MAP system provides realization of the achievement tests. The achievement test is defined as an exam oriented on the objective finding of the level of curriculum comprehension in the given group of people. In other words, the tool of systematic finding (measuring) of the teaching results (Chráska 1999). In our case, the achievement test will be the most important element for the evaluation of agriculture advisers' knowledge. The achievement test is composed of a certain number of test questions – items, which can be of various types. The division of test item types can be seen at the diagram (Figure 4).

From the data aspect, it is needed that the test module is equipped with an adequately large amount of the achievement tests equally covering all areas of the agricultural advisory curriculum (Mišovič et al. 2005). In front of all, we should deal with the standardized, objectively score-able, mono-thematic or poly-thematic cognitive tests of the absolute level. It is obviously possible to include also the tests of other types – e.g. tests of speed of psycho-motive tests, though just in a limited amount.

From the test module functionality aspect, the implementation of the adequately large specter of testing items is necessary. Due to the exigency of the immediate score-ability of the test items, it is needed to absolutely exclude wide open items, which does not have to be implemented in the test module at all. All the other test item types should be implemented and depend on the examinators (or test creators) if they take advantage of all possibilities.

It is necessary to devote the attention to the choosing of the test item scoring (TIS) methods for ensuring the test results preciseness. There is no doubt that the multiple choice items will be the most common and the most of the care should be given here. Because we demand that the agricultural adviser, who does not know anything and is going to guess the answers, gains 0 points, it is necessary to penalize guessing in the simple selective items. In the other sub-types, we do not need to deal with any penalization, because their construction, in its fundamentals, rules out the correct answer guessing. In the bijective, injective or sorting items, we can take advantage of practically any of the meaningful TIS methods mentioned at (Foltýnek, Malo 2004).

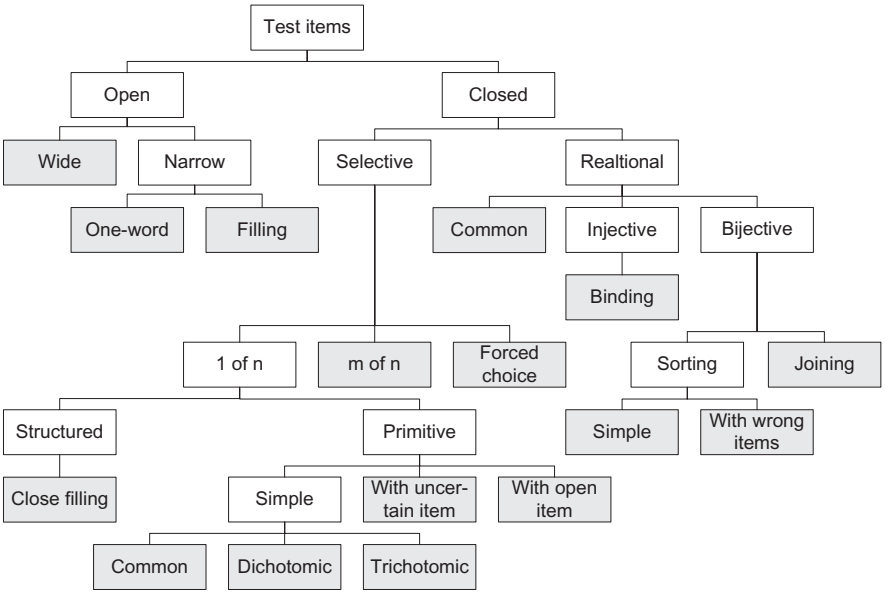


Figure 4. Division of test item types

## Agriculture advisers' knowledge evaluation

As mentioned above, providing of the learning materials through the eLearning system is one of the most important functionalities of quality of any information system (Vaníček 2006), including the MAP system. These materials are instrumental to the knowledge expansion of the agricultural advisers. Because eLearning materials are determined to the self-study, the need of proving, that advisers really increase the level of their education, comes up. The achievement test is considered to be the only objective tool of educational evaluation (Mužić 1971), which provides as an output further useful numeric data. Let us remember, that the achievement test not only measure the knowledge, but it is an integral and crowning part of whole educational process (Payne 1968).

Once having the total achievement test scores of individual advisers, we can use these data to the comparison of their advisory competences. Naturally, not only the test results predicate these capabilities adequately, however, their objectivity is without any doubt and can serve as basic criteria (Foltýnek, Malo 2004).

## Agricultural Advisory Competences establishment and measurement

The AAC – Agriculture Adviser Competency – is the indicator of the level of knowledge and abilities of the agricultural adviser. It is the individual property of each adviser. In the competitive agricultural consultancy environment, it is helpful to introduce the coefficient expressing just AAC. This coefficient will be flagged with the symbol Ω in the following text. The real number in the certain range seems to be the best way of expressing its value. This real number is going to be influenced by many criteria. First of all, let us briefly draw, what is expected of this value. In the following parts, we will deal with the exact methods of its calculation.

Kuhn (Kuhn 1997) postulated that scientists try to make some scientific problems, mostly of quantitative but also qualitative character, clear by reformulating them. From the fact aspect, the range of values of the AAC is not too important, we tried to put it in such interval, in which we can see not only the little changes (which are going to be invoked for example by decreasing the AAC depending on the time), but effectively use the whole scale of numeric values laying in the given interval as well. Meanwhile, it is necessary to count with the application of geometric progressions and other multiplicative or additive formulas which led to the assessment of the range from 0 to 6 where the values are used with two decimal digits preciseness.

Let us consider the value Ω = 1 as the threshold limit dividing individuals able to work as agricultural advisers from those who do not have these abilities. We shall deal with the initial setting of Ω in the following chapter. Further changes depend on the events coming up during the time.

The next threshold limit is the limit dividing agricultural advisers in the educational process, which do not have the right to perform an agricultural profession from those who have this right and can devote themselves to it. It is suitable to assess this value as the half of the maximal value, thus Ω = 3. Considering this, the users of the MAP system are divided from the AAC value aspect, into three groups, as described in Figure 5.

## Initial assessment of the AAC Value – Agricultural Adviser Competency test

The preparation process integrates work history and potential adviser characteristics, he/she is entering the whole process with. The value of this adviser is set to Ω = 0. Not until the value reached $\Omega_{min}$ the other two processes are started and therefore it is necessary to gain and validate this value for each potential agricultural adviser. For finding if the given person is able to pass the educational process, testing and agricultural consultancy work in future, various factors play the key role. These factors have to be identified individually for each potential expectant. We will consider the following key elements sorted due to their importance:

1. ***Common test(s) of agricultural advisory abilities*** – We have to gain information about the complex ability of the expectant for the educational process,

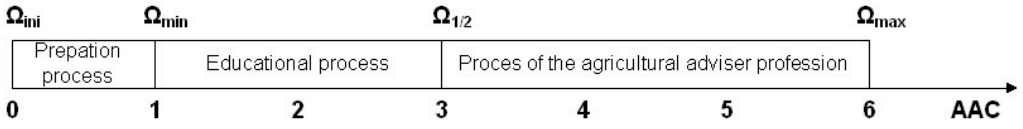


Figure 5. Boundary values of the AAC

the personality profile, abilities for studying and the talent for self-educating;

2. ***Agricultural experience*** – plays the key role for assessing the skill and experience of the participant in the agricultural area, the ability to orient himself/herself in the agricultural environment and to solve problems operatively;
3. ***Education*** – We can suppose that the gained education does not give only the professional knowledge to the individual, but also many new experiences and abilities, including for example information literacy;
4. ***Time possibilities*** – are important factors, because we need to imagine the future advisory duty. The more he/she will participate in the agricultural advisory process and the more time he/she will devote to this activity, the more his/her AAC value will rise;
5. ***Accessibility to the information technologies and internet*** – The whole educational process is realized by the eLearning form and electronic tests play the important role for the AAC assessment. Additionally, the agricultural adviser during his/her work cannot get along without the on-line access to the important information and data sources, which can be key for the farmer too;
6. ***Language competencies*** – In wider European standard, especially in the relation to the resources flowing as the subsidies to the Czech farmers, the language competency is a factor influencing the AAC;
7. ***Age*** – the last factor on the imaginary scale of values which have to be taken care of is age. Because a low or high age inhibits up to a certain point the performance of agricultural advisory activity, both for the insufficient experience and for problems (e.g. with health), which makes the contact with the farmer, subsidy applicant, impossible.

We have introduced the value clearly defining if the potential agricultural adviser is going to reach the limit $\Omega_{min}$ by his/her talent, abilities and capabilities, and which should decide, if the adviser has supposals to education with the goal of advisory activities in the agricultural area. We have called this value *entrance expectations coefficient,* we have flagged it with the symbol τ and we have decided to define it on the base of the multi-criteria model in the figure of scalar product:

$$\tau = \sum_{i=1}^{8} k_i x_i \qquad (1)$$

where $k_i$ are weight coefficients for $i \in \langle 1 \ldots 8 \rangle$, and $x_i$ are key factors for the consultancy area. The τ value is established from the interval <0, 2> and it is an essential supposal for assessment of the value $\Omega_{min}$ according to the following formula:

– if $\tau < 1$, then $\Omega_{min} = 0$
– if $\tau \geq 1$, then $\Omega_{min} = 1$

From this formula, it follows that each potential agricultural adviser, whose $\tau \in \langle 1, 2 \rangle$ has supposals for the future exercise of the adviser profession and can become a participant in the process of education and testing. In this interval, the τ value will ensure

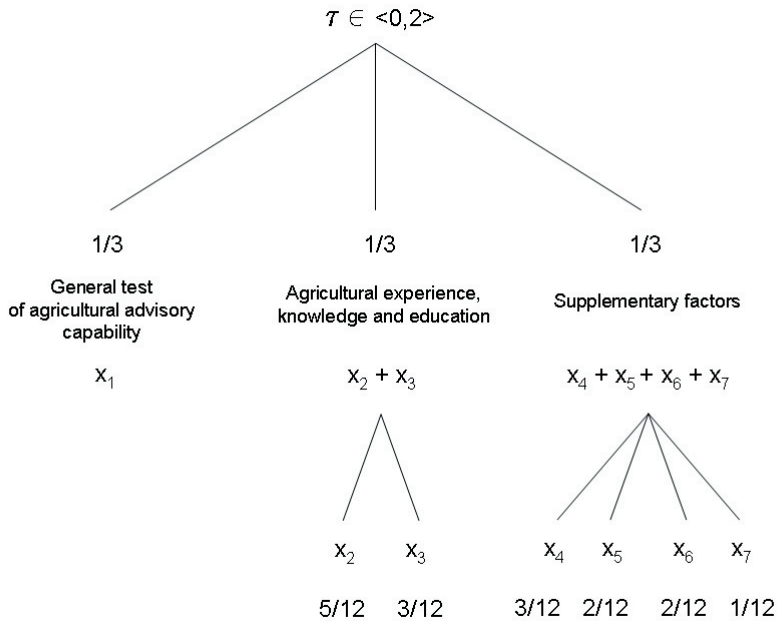


Figure 6. Pyramidal decomposition of the τ value

reaching of the minimal AAC value, thus $\Omega_{min} = 1$. On the base of the τ value, we can specify the surplus of the entrance expectations $\tau_s$ as:

$$\tau_s = \tau - \Omega_{min} \text{ for } \tau \in \langle 1, 2 \rangle \quad (2)$$

The division of key factors into three groups according to the importance and ratio of the final τ value can be seen in Figure 6 in the form of pyramidal decomposition.

The assessment of the key factor values and weight coefficients:

– $\boldsymbol{x_1}$ = total score of the agricultural advisory abilities test/maximal possible score of test. Coefficient $k_1$ grows from the supposal that the whole ratio of the test to the value τ is one third: $\boldsymbol{k_1 = 2/3 = 0.67}$.
– $\boldsymbol{x_2}$ = total agricultural experience in years/average number of years in the productive age. The ratio of coefficients $k_2$ and $k_3$ is totally one third; from this ratio $\boldsymbol{k_2 = 2/12 = 0.42}$.
– $\boldsymbol{x_3}$ = gained education constant (university: $x_3 = 1$, high school: $x_3 = 0.5$, basic school: $x_3 = 0.25$). The ratio of the coefficient $\boldsymbol{k_3 = 3/12 = 0.25}$.
– $\boldsymbol{x_4}$ = number of hours actually worked per week/total number of working hours per week. The remaining four coefficient of supplementary factors are divided unequally from one third of τ, whereas $\boldsymbol{k_4 = 3/12 = 0.25}$.
– $\boldsymbol{x_5}$ = number of hours of accessibility to IT per day/24. The ratio of the coefficient $\boldsymbol{k_5 = 2/12 = 0.17}$.
– $\boldsymbol{x_6}$ = total score of the language test/maximal possible score of the test. The ratio of the coefficient $\boldsymbol{k_6 = 2/12 = 0.17}$.
– $\boldsymbol{x_7} = e^{-(v-20)^2}$, where $v$ is age. The ratio of the coefficient is $\boldsymbol{k_7 = 1/12 = 0.08}$.

## AAC value changes

The AAC value, whose initial calculation is shown in the previous chapter, is changing during the time. No changes are of their own accord; they are always invoked by an event. The events leading to the change of the AAC value can be divided according to two criteria:

1. According to the way of the change
   – events ***decreasing*** AAC
   – events ***increasing*** AAC
2. According to the spread
   – ***individual*** events, affecting just one adviser
   – ***mass*** events, affecting all advisers

Now, let us try to enumerate activities increasing the AAC. In front of all it's studying of relevant educational materials bearing on the agriculture advisory problems, or new legislation of all kinds. As proposed the Kuhn (Kuhn 1997), the observation and experience can and must drastically restrict the field of the acceptable scientific confidences, the other way the science cannot exist. Undoubtedly, practical experiences make the AAC increasing. The more the adviser devotes his/her time to such activity, the more we can suppose it will be done better (Mišovič et al. 2005).

On the other hand, we have to consider also the activities decreasing AAC, especially forgetting. That is why the AAC is negatively influenced by the time. The next important element devaluing the AAC is the obsoletion of knowledge. New legislation, new methods of financial resources gaining, changes of the implementing regulations – all of these are circumstances decreasing the AAC of all advisers, who need to learn all changes at first to be able to realize agriculture consultancy in the same quality as before the implementation of changes.

Let us now name and file the mentioned events. Every event is evaluated by the event importance coefficient.

– ***Educational event*** – is caused by adviser who passes the eLearning course concluded with the achievement test. According to the amount of knowledge covered by the test, its difficulty and the total score reached in the test, the coefficient of event importance is assessed.
– ***Advisory event*** – is also an event caused by adviser who realizes the concrete advisory activity. The event importance coefficient depends on the importance of the particular advisory activity performing the event. Advisory event is an individual event increasing the AAC.
– ***Time event*** – is a mass event decreasing the AAC. This event is invoked automatically by the MAP system in certain time intervals defined in advance. Its goal is the simulation of the knowledge forgetting process.
– ***Legislation event*** – is invoked by passage of a new legislation influencing the agricultural consultancy. It is also a mass action decreasing the AAC, whereas its importance coefficient depends on the importance of new legislation.

The value of the AAC of particular agriculture adviser after the event depends on:

– Value of the AAC before the event ($\Omega_0$)
– Event importance coefficient α

For designing the most general formula useful for the AAC change expression, it is necessary to consider even those extreme events devaluating AAC of all

advisers to the minimal value ($\Omega_{min}$), or increasing to the maximal value ($\Omega_{max}$), even these events never turn up in reality.

The event importance coefficient α is negative if the event decrease the value of the AAC and positive if the event increases it. We deal with the real number from the interval $<\alpha_{min}, \alpha_{max}>$, where the boundary values represent just the described extreme theoretical events.

Furthermore, we will assess next theoretical element, so-called *zero event*, an event with the importance coefficient α = 0, which does not change the AAC.

Therefore, it is

$$\Omega = \begin{cases} \Omega_{min} + (\Omega_0 - \Omega_{min}) \cdot (\alpha - \alpha_{min}), \text{ for } \alpha \geq 0 \\ \Omega_{max} - (\Omega_{max} - \Omega_0) \cdot (\alpha_{max} - \alpha), \text{ for } \alpha \leq 0 \end{cases}$$

For the zero event, we can use any of the offered formulas, because in both cases it obviously is valid that $\Omega = \Omega_0$. As already mentioned, zero events are just theoretical events.

## CONCLUSION

In the previous chapters, we focused on the functionality of the MAP systems not only as an information portals for adviser, thus as a tool for searching for the information, but also as an educational portal, thus a tool for increasing the education and advisory abilities of its users. We took advantage from this for building the theory of agriculture adviser capabilities measurement (AAC), as a measurable personal characteristic predicating the expected quality of the potential advisory services. We designed an indicator, which is going to be not only the subject of emulation among advisers, but also a possible base for financial evaluation of advisory services.

We showed how to assess an initial value of the AAC needed for the entrance of the individual to the agricultural advisory process. The knowledge, published in this paper, can be used not only in the advisory processes related to the agriculture; they can be used for advisers in any area.

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