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WORK HUMANISM

Motivation Factors of Decision Making Person

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Decision making is a creative and knowledge demanding process which is being analyzed in scientific publications and continually improved in practice. The Authors of this article have sought to systematize results of behavior of both motivation factors of decision making person (DMP) and environment factor found in various publications and also to present their own approach to perception of information meaning within diverse time intervals. Environment factor in econometric models is understood as what influences activity of analyzed system but acts independent of the system. Problems of investigating environment factor's influence in the decision support systems are related to receiving exact information about state of this factor. Unlike environment factor which acts as unknowing gambler decision making person is described as a conscious gambler. Market, social relations, nature, non-managed organization and other objects might be considered as environment factor while separate individual, group of decision making persons or managed organization are named as decision making person. Elements, that sophisticated system is made of, have their purposes and problems related to problems and purposes of the whole system to solve. Solution of every problem depends upon elements' available amount of resources. Conflict situations come up because total resources of the whole system are limited but the purposes of different elements vary and it is difficult to combine amount of resources needed for solving problems of these elements with limitations of the whole system. However the biggest problem when making decisions is the estimation of environment factor's influence. Therefore it is very important to pay attention to the circumstances that environment states research should include evaluation of risk factor of receiving exact information from reliable source. If consultancy was paid for reliable information soon, it is possible to incur large losses seeing that, after circumstances have changed this information might lose not only worth but also meaning. Therefore, if time for project implementation is t but managers have to make decision on fixed time moment t_0 they must size up risk of using information about market states favor. According to the opinion of the authors of this article it is considered appropriate to take ratio between time interval of all project implementation and time interval of change of information worth as risk valuation criterion. Time interval within information has lost its meaning in respect of decision making quality and was named as critical time. Critical time shows uncertainty level or, in the other words, it shows time interval in which it is not known how available information could be used. The Authors have analyzed three situations of critical time displacement and have made conclusion that displacement of critical time to the end of project implementation reduces decision making risk. Therefore the main motivation of decision making person should be based on exact information knowing risk of changes of this information meaning. Decision making person is always interested in states of environment factor and price of exact information about states of this factor.

Keywords: *decision making person, environment factor, information meaning.*

Introduction

Newness of work. Decision making is a creative and knowledge demanding process which is being analyzed in scientific publications and continually improved in practice. A lot of scientists refer to management decision making principles stated in works of Neumann and Morgenstern, also in works of Vilkas. Other authors develop decision making theory under uncertainty conditions and present results of research of decision making person behaviour and states of analyzed environment factor.

The novelty of the articles that it was suggests to evaluate in more detail the usefulness of information in respect of time by estimating ratio of time and information meaning.

Object of investigation. Decision making factors, their behaviour and decision making under uncertainty conditions.

Methodology of investigation. Analytical method is chosen for research of decision making factors. The main research is done empirically using decision making theory.

Reaction of decision making person to the behaviour of environment factor

The success of subject work essentially depends on how the subject has made decision. The success is expressed in measures of effectiveness of management decision. Management decisions often must be made under uncertainty conditions, i.e. according to behaviour of environment factor (von Neumann, and Morgenstern, 1947; Kenny, Raiffa, 1976; Vilkas, 1990). Environment factor in econometric models is usually understood as force that influences activity of researched system but acts irrespective of the system (Luce, Raiffa H.,1957; Marostica, et. al., 2005). Research problems of environment factor in-

fluence in decision support system are related to receiving exact information about the state of this factor (Dubrov, Lagoša, Chrustaliov, 1999; Mulligan, Hastie, 2005; Li, et. al., 2004). Majority of econometric models cannot be applied in practice of economic activity because specification of their development (Novickas, Stungurienė, 2001), and because these models are developed for multiplex usage. As generally economic situation is unique and decisions are made only once and term *uncertainty* is usually related to probabilistic fruition of prospective events therefore necessity for development of methods of decision making under uncertainty and risk conditions appears (Brown, 1992; Rutkauskas, Rutkauskas, 1999; Keeney, Raiffa, 1976; Engerman, 2005). Some authors recommend using game with environment factors theory for solving management problems under mentioned conditions (Wang Y, et al., 2005; Lofti, Abdezerak, 2003; Vilkas, 1990; Myerson, 1991, Koller, 1996) and create appropriate models on the basis of this theory. Decision making persons or managed organization are named as decision making person (Figure 1).

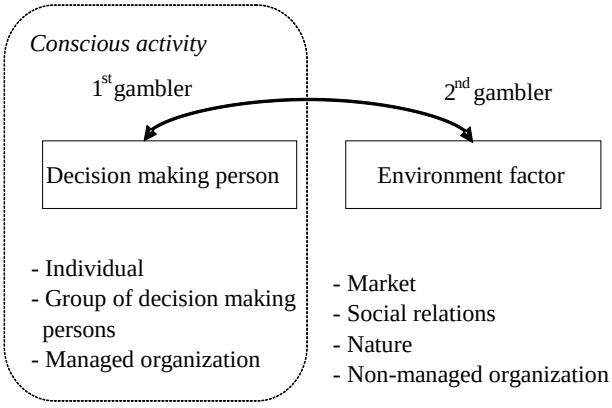

Figure 1. Factors of decision making

While investigating and designing behavior and possible states of sophisticated systems (Bish, 2004), it is necessary to take into consideration their both internal and external conflicts that come up because of such reasons: a) system sophistication; b) different purposes and resources of system elements; c) uncontrolled parameters of system environment (Vilkas, 1990).

Elements, that sophisticated system is made of, have their purposes and problems to solve that are related to problems and purposes of the whole system. Solution of every problem depends upon elements' available amount of resources. The essence of conflict is that total resources of the whole system are limited but the purposes of different elements vary and it is difficult to combine amount of resources needed for solving problems of these elements with limitations of the whole system.

Elements of the system have their purposes and resources. Every element solves its problems. Conflict comes up because results of decisions depend on actions of both element mentioned and other elements (Hurley, Shogren, 2005). Sophistication of the conflict is determined by totality of elements and relations between them.

System functions in the environment whose parameters cannot be controlled. But efficiency of system actions while seeking goals or solving problems depends on environment parameters.

Practical aspects of creating decision making models

As there is only one consciously acting gambler, decision making is complicated by these conditions: a) problem of choosing decision becomes simpler for a decision making person if intellectual gambler (opponent) was absent; b) although DMP has no obstructions it is more complicated for DMP to motivate its choice because assured result is unknown. Decision choice is complicated also because behaviour of a decision making person is always risky because of possible unexpected environment impact (Moore, Schalter, 2003; Van Bruggen, Wierenga, 2001). Depending on probability determination of environment factor states decision making might be: a) under conditions of total uncertainty; b) under risk conditions. However, irrespective of applied decision method conscious gambler tries to forecast behavior of environment for achieving dual goal: a) uncertainty reduction; b) more precise security rating.

For the implementation of these goals information about environment factor's factual state at the time when decision is made must be received. While modeling behavior of DMP and environment factor three problematic research fields might be separated (Figure 2): a) description of environment factor state in chosen time *t*; b) evaluation of exact information; c) estimation of probabilities of environment factor states.

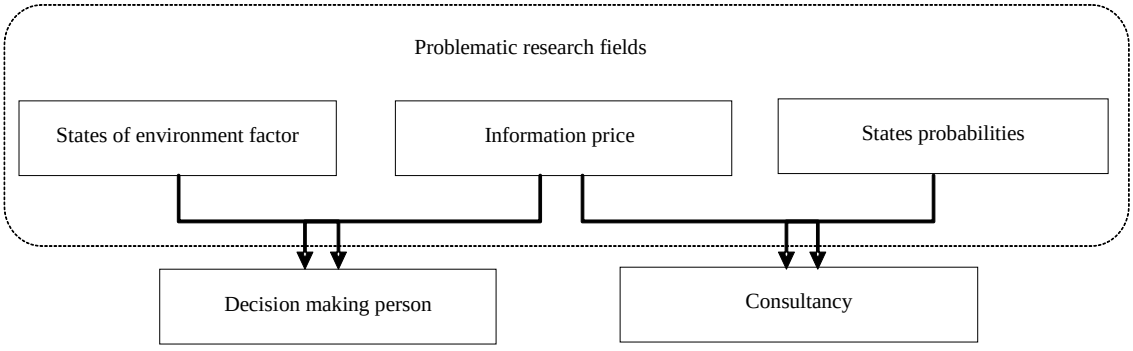

Figure 2. Problematic research fields and subjects interested in these fields

Described state of environment factor on time *t* realistically might be fixed only with certain probability (Makowski M., 2005). Fair sample of statistical data, virtuosity in applying various methods of statistical data analysis and ability to prognosticate probability process is necessary for estimation of the concrete above – mentioned probability (Jeffrey R. C., 1983). But DMP is interested in results- state of the system and probability with which this state could become reality, and he is not interested in technology of state determination.

Technically problem of exact information evaluation might be decided as determination of the information price that decision making person would have to pay for consultancy. Relations between decision making person and consultancy might be treated as the subject matter of negotiations because decision making person is concerned to get exact information about states of environment factor with less as possible expenses (Howard, 1966; Howard, 1977). Therefore probability estimation of environment factor state should be understood as work object for consultancy and as a means that helps to make a required decision under uncertainty conditions for decision making person.

American scientists Neumann and Morgenstern (Neumann, Morgenstern, 1970) were the first ones who have formed theory of subjective decisions acceptance and proved that decision making person seeks for maximum of expected benefit. Although above-mentioned scientists were not categorical and emphasized only general goal tendency of decision making – to seek for the biggest possible benefit, it is obvious that none subject behaves conversely in the decision making process. Even in the case of unavoidable failure it is believable that decision making person would choose variant with minimum losses (Hurley, 2005; Mulligan, 2005; Astebro, 2005).

Decision making becomes risky and subjective process because only decision making person valuates events and makes decisions and environment factor can- not provide any events' valuation (Makowski, 2005). Therefore usage of game with nature theory for decision making does not reduce risk and uncertainty even if three possible variants of Neumann and Morgenstern usefulness functions were taken into consideration according to DMP propensity to risk: a) has no propensity to risk; b) indifferent to risk; c) has propensity to risk (or always takes risk). Therefore to reduce risk and uncertainty it should be considered appropriate to delegate function of quantitative expression assignment for every possible event to another conscious subject. Individual persons or institutions investigating behavior of environment factor as the whole and interest of decision making person as separate case might become such subject. For example, while making project decision assistance of market research specialists might be necessary to estimate the states and tolerance for new production in the market in which expected to manufacture production would be sold (Dunkan, 1996; Moore, 2003).

Problems in receiving and estimating meaning of exact information

Games with environment factor are often assigned to statistical games because probability distribution of states or strategies of this factor might be estimated on the basis of statistical experiment. Decision tree (Kim Cao-Van, 2003; Li, 2004, Render, et al., 2003; Haralic, 1980) is used as a means for decision making under uncertainty or risk conditions. *Exact* information about factual state of environment factor on decision making time is needed for the correction of results obtained using decision tree. Receiving of exact information is usually related to additional expenses (Dubrov, 1999; Howard, 1966). It means that financial decision must be made: estimate the price of exact information and decide if it is worth to make a deal to get this information.

DMP is directly interested in expected worth estimation of exact information about states of environment factor because it could use services of alternative information sources under conditions of market economy (Hinterhuber, 2004). Only knowing in advance what highest price desirable information could have DMP is able to choose information sources rationally and take part in negotiations about conditions of purchasing exact information.

According to the opinion of the authors of this article, further discussion about decision to order research of market states should include evaluation of risk factor of receiving exact information from reliable source. For example, if consultancy gives exact information about situation in market during current month or current year but we have to refer to this information of two years (two years are necessary for implementing project) so circumstances during such long period of time might change in essence (Sauer, Willcocks, 2003; Horvitz, 1995). If consultancy was paid today for reliable information soon it is possible to incur large losses seeing that, after circumstances have changed this information might lose not only worth but also meaning (Koenig, 2000; Wang, Weigend, 2004).

If time for project implementation is *t* but managers have to make decision on fixed time moment t_0 they must size up risk of using information about market states favor (Jeffrey, 1983; Howard, 1977; Smith, 1988). Suppose that risk of using available information must be sized up in the interval $t_2 - t_1$. According to the opinion of authors of this article it is considered appropriate to take ratio between time interval of all project implementation and time interval of change of information worth as risk valuation criterion:

$$\frac{t_2 - t_1}{t}$$

We called time interval $t_2 - t_1$ as critical time because meaning of information's further usage changes namely in this interval (Figure 3). Information is useful and meaningful in time interval $t_1 - t_0$. This information must be bought and effectively used when making decision. Available information is no longer valuable in the period $t - t_2$. In other words this information has lost its meaning because of changed market conditions. For example, it came out while implementing project that competitors have gained monopoly in the market. Company will definitely incur failure in this case. Therefore information about behavior of environment factor that was reliable and exact at the time of decision making now does not pass the reality and actually have lost its meaning. In fact information inapplicable with time needs can not be used any more.

If ratio between $t_2 - t_1$ and all time of project implementation *t* is not very big (Figure 3), then risk is not so problematic comparing with situation presented in Figure 4.

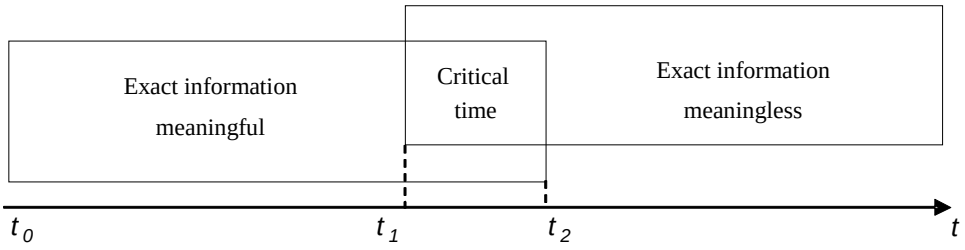

Figure 3. Time of changing information worth. First situation

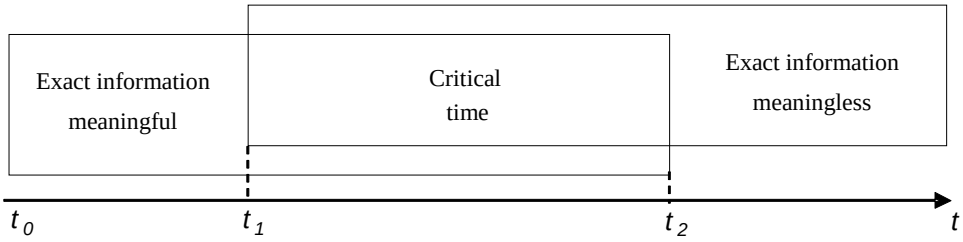

Figure 4. Time of changing information worth. Second situation

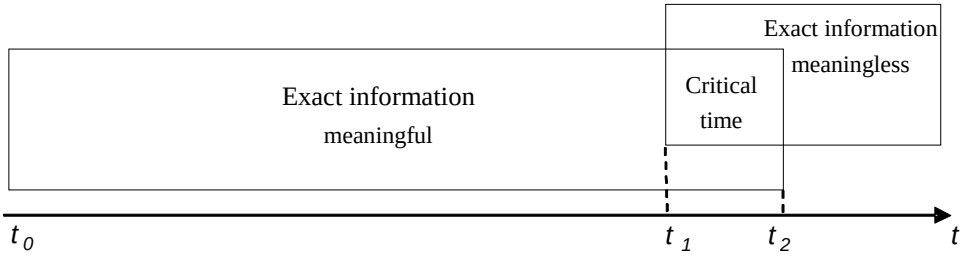

Figure 5. Time of changing information worth. Third situation.

Critical time shows uncertainty level or, in the other words, shows time interval in which it is not known how available information could be used. It is possible to say experimentally that displacement of critical time to the end of project implementation reduces risk (Figure 5).

According to three presented situations, it is possible to say that risk reduction has close relation with displacement of both t_1 and t_2 towards t. Therefore distance of both t_1 and t_2 from t_0 or distance of both t_1 and t_2 to t might be treated as risk measure for information usefulness.

Another approach to risk (Stungurienė, 2004; Christauskas, 2005) is referable to ability prognosticate and predict how long exact information might be used or how long favorable situation for project implementation could last. Therefore after the decision to order market research and pay for receivable information was made a new problem arises: are specialists of consultancy able to model competently market changes in the future (Engerman, 2005; Nagurney, 2006; Andersen, 2004).

Conclusions

1. Attention should be paid to research of decision making under uncertainty conditions partly applying principles of game theory as both theoretical knowledge and practical skills are required for decision making.
2. Unlike environment factor, which acts as unknowing gambler, decision making person is described as a conscious gambler.
3. Decision making person is directly interested in expected worth estimation of exact information about states of environment factor because it could use services of alternative information sources under conditions of market economy. Only knowing in advance what highest price desirable information could have decision making person is able to choose information sources rationally and take part in negotiations about conditions of purchasing exact information.
4. Critical time is the time interval within which exact information might loose its meaning therefore it is important to analyze change tendencies of this interval in the implementation of the project for which the decision was made.
5. According to the opinion of authors of this article, it is considered appropriate to take ratio between time interval of all project implementation and time interval of change of information worth as risk valuation criterion.
6. Accomplished research might broaden conception of decision making under uncertainty conditions and form new approach to price information about environment factor and also to risk when purchasing this information.

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Sprendimus priimančio asmens motyvacijos veiksniai

Santrauka

Sprendimų priėmimas yra kūrybinis ir daug žinių reikalaujantis procesas, kuris nagrinėjamas moksliniuose leidiniuose bei nuolat tobulinamas praktinėje veikloje. Šio straipsnio autoriai siekė susisteminti sprendimus priimančio asmens motyvacijos veiksnių ir aplinkos veiksnio elgsenos rezultatus, randamus įvairiose publikacijose, bei pateikti savo požiūrį į informacijos prasmės suvokimą skirtingais laiko intervalais.

Darbo naujumas. Daugelis mokslininkų remiasi Dž. Neumann ir O. Morgenstern, R.L. Kenny ir H. Raiffa bei E. Vilko darbuose išdėstytais valdymo sprendimų priėmimo principais. Kiti autoriai

plėtoja sprendimų priėmimo teoriją neapibrėžtumo sąlygomis ir pateikia sprendimus priimančio asmens elgsenos ir nagrinėjamos aplinkos veiksnio būsenų tyrimo rezultatus.

Straipsnio naujumą rodo tai, kad sprendimų priėmimo teorijoje siūloma detaliau vertinti informacijos naudingumą laiko atžvilgiu, nustatant laiko ir informacijos prasmės santykį.

Tyrimų objektas. Sprendimų priėmimo veiksniai, jų elgsena bei sprendimų priėmimas neapibrėžtumo sąlygomis.

Tyrimų metodika. Sprendimų priėmimo veiksniams tirti pasirinktas analitinis metodas. Pagrindinis tyrimas atliktas empiriškai naudojant sprendimų priėmimo teoriją.

Ekonometriniuose modeliuose kaip aplinkos veiksnys suprantama tai, kas daro įtaką nagrinėjamos sistemos veiklai, bet veikia nepriklausomai nuo pačios sistemos. Sprendimų paramos sistemose aplinkos veiksnio įtakos tyrimo problemos siejamos su tikslios informacijos apie šio veiksnio būseną gavimu. Skirtingai negu aplinkos veiksnys, veikiantis kaip nesąmoningas lošėjas, sprendimus priimantis asmuo apibūdinamas kaip sąmoningas lošėjas. Aplinkos veiksnys gali būti rinka, socialiniai santykiai, gamta, nevaldoma organizacija ir kiti objektai, o sprendimus priimantis asmuo įvardijamas kaip atskiras individas, sprendimus priimančių asmenų grupė arba valdoma organizacija. Sudėtingą sistemą sudarantys elementai turi savo tikslus ir sprendžiamus uždavinius, kurie siejami su visos sistemos tikslais ir uždaviniais. Kiekvieno uždavinio sprendimas priklauso nuo elementų turimo išteklių kiekio. Kadangi visos sistemos bendri ištekliai yra riboti, o atskirų elementų tikslai nesutampa, ir šių elementų uždaviniams spręsti reikalingų išteklių kiekį sunku derinti su visos sistemos apribojimais, susidaro konfliktinių situacijų.

Tiriant ir projektuojant sudėtingų sistemų elgseną ir galimas jų būsenas, būtina atsižvelgti į vidaus ir išorės konfliktus, kurie kyla dėl priežasčių, tokių kaip: a) sistemos sudėtingumas; b) skirtingi sistemos elementų tikslai bei ištekliai; c) nekontroliuojami sistemos aplinkos parametrai.

Sudėtingą sistemą sudarantys elementai turi savų tikslų ir sprendžiamų uždavinių, siejamų su visos sistemos tikslais ir uždaviniais. Kiekvieno uždavinio sprendimas priklauso nuo elementų turimo išteklių kiekio. Konflikto esmė ta, kad visos sistemos bendri ištekliai yra riboti, o atskirų elementų tikslai nesutampa, ir šių elementų uždaviniams spręsti reikalingų išteklių kiekį sunku derinti su visos sistemos apribojimais. Konfliktas gali kilti ir dėl to, kad sprendimų rezultatai priklauso ne tik nuo savo veiksmų, bet ir nuo kitų elementų veiksmų. Taigi konflikto sudėtingumą lemia elementų ir jų ryšių visuma.

Sistema funkcionuoja aplinkoje, kurios parametrų negalima kontroliuoti. Bet nuo aplinkos parametrų priklauso sistemos veiksmų efektyvumas siekiant tikslų ir sprendžiant uždavinius. Kadangi aplinkos veiksnys negali pateikti jokio įvykių vertinimo, ir tik sprendimus priimantis asmuo vertina įvykius ir priima sprendimus, sprendimų priėmimas tampa rizikingu ir subjektyviu procesu. Todėl lošimų su gamta teorijos naudojimas sprendimams priimti nesumažina rizikos ir neapibrėžtumo netgi tuo atveju, kai atsižvelgiama į tris galimus Dž. Neumann ir O. Morgenstern naudingumo funkcijų variantus pagal sprendimus priimančio asmens polinkį rizikuoti: a) neturi polinkio rizikuoti; b) abejingas rizikai; c) turi polinkį rizikuoti (arba visada rizikuoja). Todėl, norint sumažinti riziką ir neapibrėžtumą, būtų tikslinga kiekybinės išraiškos kiekvienam galimam įvykiui priskyrimo funkciją deleguoti kitam sąmoningam subjektui. Tokiu subjektu gali tapti atskiri asmenys arba institucijos, tiriantys aplinkos veiksnio elgseną kaip visumą, sprendimus priimančio asmens interesus – kaip dalinį atvejį. Pavyzdžiui, priimant projektinį sprendimą, gali būti reikalinga rinkotyros specialistų pagalba rinkos, kurioje ketinama parduodi numatomą gaminti produkciją, būsenoms ir tolerancijai naujai produkcijai nustatyti.

Tačiau priimant sprendimus sunkiausia yra įvertinti aplinkos veiksnio įtaką. Todėl labai svarbu atkreipti dėmesį į tai, kad aplinkos būsenų tyrimas apimtų tikslios informacijos gavimo iš patikimo šaltinio rizikos veiksnio įvertinimą.

Sprendimams priimti reikia teorinių žinių ir praktinių įgūdžių, todėl būtina skirti dėmesio sprendimų priėmimo neapibrėžtumo sąlygomis tyrinėjimui, iš dalies taikant lošimų teorijos pricipus. Lošimai su aplinkos veiksniu dažnai priskiriami prie statistinių lošimų dėl to, kad statistinio eksperimento pagrindu galima nustatyti šio veiksnio būklių arba strategijų tikimybių pasiskirstymą.

Sprendimus priimantis asmuo yra tiesiogiai suinteresuotas tikslios informacijos apie aplinkos veiksnio būsenas laukiamos vertės-nustatymu, nes rinkos ekonomikos sąlygomis jis gali naudotis alternatyvių informacijos šaltinių paslaugomis. Tik iš anksto žinodamas, kokią maksimalią kainą gali turėti norima įsigyti informacija, sprendimus priimantis asmuo racionaliai galės rinktis informacijos šaltinius ir dalyvauti derybose dėl tikslios informacijos įsigijimo sąlygų.

Jeigu konsultacinei firmai mokama už patikimą informaciją, netrukus galima patirti didžiulių nuostolių, nes, pasikeitus aplinkybėms, ši informacija gali prarasti ne tik vertę, bet ir prasmę.

Jeigu projekto realizavimo laikas yra t, o vadybininkai turi priimti sprendimą fiksuotu laiko momentu t_0, jie privalo įvertinti informacijos apie rinkos būsenų palankumą panaudojimo riziką. Tarkime, kad intervale $t_2 - t_1$ turi būti įvertinta turimos informacijos panaudojimo rizika.

Šio straipsnio autorių nuomone, rizikos vertinimo kriterijumi tikslinga imti viso projekto įgyvendinimo ir informacijos vertės pasikeitimo laiko intervalų santykį: $(t_2 - t_1)/t$.

Mes pavadinome laiko intervalą $t_2 - t_1$, kritiniu laiku, nes būtent šiame intervale kinta informacijos tolesnio naudojimo prasmė. Intervale $t_1 - t_0$ informacija yra naudinga ir turi prasmę. Už šią informaciją yra sumokėta, ir ji iš tikrųjų turi būti panaudota priimant sprendimą. Intervale $t - t_2$ turima informacija jau nėra vertinga. Kitaip tariant, ši informacija yra praradusi prasmę dėl pasikeitusių rinkos sąlygų. Pavyzdžiui, projekto įgyvendinimo metu paaiškėja, kad konkurentai rinkoje įgijo monopolį. Šiuo atveju firma tikrai patirs nesėkmę. Taigi informacija apie aplinkos veiksnio elgseną, buvusi patikima ir tiksli sprendimo priėmimo metu, dabar jau neatitinka tikrovės ir, galima sakyti, praradusi prasmę. Iš tikrųjų laiko poreikių neatitinkanti informacija jau negali būti naudojama.

Jeigu $t_2 - t_1$ ir viso projekto įgyvendinimo laiko t santykis nėra labai didelis, rizika nėra tokia problemiška, lygti su situacija, kai kritinis laikas dominuoja projekto įgyvendinimo trukmėje. Pagal pateiktas tris situacijas galima teigti, kad rizikos mažinimas glaudžiai siejasi su t_1 ir t_2 poslinkiu t link. Taigi t_1 ir t_2 atstumas nuo t_0 arba t_1 ir t_2 atstumas nuo t gali būti traktuojama kaip informacijos naudingumo rizikos matas.

Taigi, jeigu projekto realizavimo laikas yra t, o vadybininkai turi priimti sprendimą fiksuotu laiko momentu t_0, jie privalo įvertinti informacijos apie rinkos būsenų palankumą panaudojimo riziką. Šio straipsnio autorių nuomone, kai rizikos vertinimo kriterijų tikslinga imti viso projekto įgyvendinimo ir informacijos vertės pasikeitimo laiko intervalų santykį. Laiko intervalas, kuriame informacija praranda prasmę sprendimo priėmimo kokybės atžvilgiu, pavadintas kritiniu laiku. Kritinis laikas rodo neapibrėžtumo lygį, arba, kitais žodžiais tariant parodo laiko intervalą, kuriame nėra žinoma, kaip būtų galima panaudoti turimą informaciją. Autoriai nagrinėja tris kritinio laiko poslinkio situacijas ir daro išvadą, kad kritinio laiko postūmis į projekto įgyvendinimo pabaigą mažina sprendimo priėmimo riziką. Taigi pagrindinė sprendimus priimančio asmens motyvacija turi būti grindžiama tikslia informacija, žinant šios informacijos prasmės kitimo riziką. Sprendimus priimantį asmenį visada domina aplinkos veiksnio būsenos ir tikslios informacijos apie šio veiksnio būsenas kaina.

Straipsnio išvados atspindi atliktų tyrimo esmę; toliau pateikiamas jų formulavimas: a) sprendimus priimantys asmenys visada turi įvertinti sprendimo priėmimo riziką, todėl būtina tiksliai apibrėžti ne tik sprendimus priimančio asmens veiksmų motyvaciją, bet ir atsižvelgti į aplinkos veiksnio būsenų kitimą; b) sprendimams priimti reikia teorinių žinių ir praktinių įgūdžių, todėl būtina skirti dėmesio sprendimų priėmimo neapibrėžtumo sąlygomis tyrinėjimui, iš dalies taikant lošimų teorijos pricipus; c) skirtingai negu aplinkos veiksnys, kuris veikia kaip nesąmoningas lošėjas, sprendimus priimantis asmuo apibūdinamas kaip sąmoningas lošėjas; d) sprendimus priimantis asmuo yra tiesiogiai suinteresuotas tikslios informacijos apie aplinkos veiksnio būsenas laukiamos vertės nustatymu, nes rinkos ekonomikos sąlygomis jis gali naudotis alternatyvių informacijos šaltinių paslaugomis; e) kritinis laikas yra tas laiko intervalas, per kurį tiksli informacija gali prarasti prasmę, todėl svarbu tirti šio intervalo poslinkio tendencijas projekto, dėl kurio priimtas sprendimas, įgyvendinime; f) šio straipsnio autorių nuomone, kaip rizikos vertinimo kriterijų tikslinga imti viso projekto įgyvendinimo ir informacijos vertės pasikeitimo laiko intervalų santykį.

Raktažodžiai: *sprendimus priimantis asmuo, aplinkos veiksnys, informacijos prasmė.*

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