Time span of discretionality: a way of measuring job levels in public or private organisations

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Abstract: *The necessity to measure and compare job levels in different organisation is known since very old times, the first important attempt we had in the history is the "TABULA DIGNITATUM" in the late Roman Empire, and similar schemas have been tried in several cases, generally without proper quantitative and statistical methods.*

Starting from 1950's, in the general framework of the organisation theory supported by the Tavistock Institute, the psychologist Elliot Jaques together with the industrial manager Wilfred Brown started a new research trying to find a proper quantitative parameter to measure the job level and to set up a criterion for equitable payment The research (Glacier Project, 1950) was followed by further studies on the British National Health System (Rawbottom, Billis) and other studies until the research of Ivanov (2006).

The result is that job level can be measured with a proper parameter whose name is "time span of discretionality", that this parameter can be uniformly used in any kind of organisation and eventually that it is related to the equitable payment related to the job itself.

The paper shows the history of the research, its result and its possible future developments and describes some application and possibilities related to the Italian case.

Keywords: organisation, time, job, level, payment, subordinate, manager, hierarchy

1. Time span of discretionality

Time span of discretionality is the focus of an extensive research conducted over a period of 50 years by Elliott Jaques and others. The concept allows understanding and measuring several elements related to the complexity of a task, complexity of a role and the capability of a person. It has applications in company organisation and reporting.

Time span is defined as "the length of time that a person can work, into the future, without direction, using their own discretionary judgment."

Then the time span of a delegated task can be defined as the length of elapsed time between the task handing off and the completion of the task itself. Time span can be used to measure the complexity of a task: the shorter the time span, the more certain are its elements and its outcome, the longer the time span, the less certain are its elements and its outcome.

The precise definition should be more detailed: as a matter of fact a distinction should be made between a job with several simultaneous tasks or a single task job, taking into consideration the management and controlling procedures.

The time span of discretionality can be used as a guideline to create a system of ranks in order to divide rank from role as well as to compare roles and then working levels and related payment in different organisations. This is quite normal in major organisations; reference can easily be made to the military structure.

Each person at a certain time of his life is able to work at a certain individual time span of discretionality corresponding to his level of culture, experience, and professional capacity as well as of psychological maturity. The individual time span of discretionality increases with the age, the time span corresponding to 55 years of age is defined "nominal time span of discretionality".

The use of this measuring method, besides allowing comparisons between roles in different organisations and dimensioning of the payment system, allows to compare the individual capacity to the job assigned as well as to make some assumption with regards to the potential capacity. The individual capacity should be congruent with the role and with the payment.

Jaques and others have drawn a summary table of working levels and relevant time span of discretionality that is summarised below:

Level	Grade	Time span	Decision	Military STANAG codes	Companies	
I	D	1 day	Prescribed, pragmatic	OR1 to OR9	Labourers	
	C	1 week			Semiskilled	Employees
	B	1 month				
	A	3 months			Skilled worker	
II	C	6 months	Routine		Technicians, specialists	Coordinating employees
	B	9 months				
	A	1 year				
III	C	16 months	Interpretative, scheduling	OF1 and OF2	Low or junior Management	
	B	20 months				
	A	2 years				
IV	C	3 years	Programming, planning	OF3 to OF5	Senior Management, Management of middle size companies	
	B	4 years				
	A	5 years				
V	C	5 to 10 years	Policy and coordinating policy	OF6 to OF8	General Management	
	B					
	A					
VI	B	10 to 20 years		OF 9 and more	Top Management of major companies	
	A					
VII and more		> 20 years				

The table can be completed with further studies and research such as Rawbottom & Billis, Ivanov, Paterson, Castellion and others and can eventually be compared to the Italian case. A further comparison, based on a previous Italian research, is relevant to Engineering and Construction companies. Reference can also be made to several research and studies made by multinational companies for their internal purposes.

2. Equitable payment

The theory of the equitable payment is consequential to the above studies. It has not been widely applied due to the fact that both parties (unions and employers) have decided to rely on negotiation instead of relying on an objective criterion. The illusion of both parties has been that they could afford the better results through negotiation than they could have obtained through rationalisation. By this way, they have originated a market distortion with regards to the relationship between level of the work and salary.

The "level of the work" pertaining to a specific role in any organization can be measured by the time span of discretionality, that can be used also to compare the level of the work pertaining to roles in different organizations, as it has been described in the previous paragraph.

For each level and for each role can be defined an **equitable payment**, that is the pay statistically considered as equitable by people for the work they are actually doing (without considering neither the work they would like to do nor the work they feel to be able to do).

By this way, we define a concept of **statistical equity** that is different from both legal and ethical definitions of equity. The equitable payment can be calculated with an exponential formula:

$$\mathbf{R}_e = \mathbf{R}_0 \exp \frac{\lambda}{\lambda_0}$$
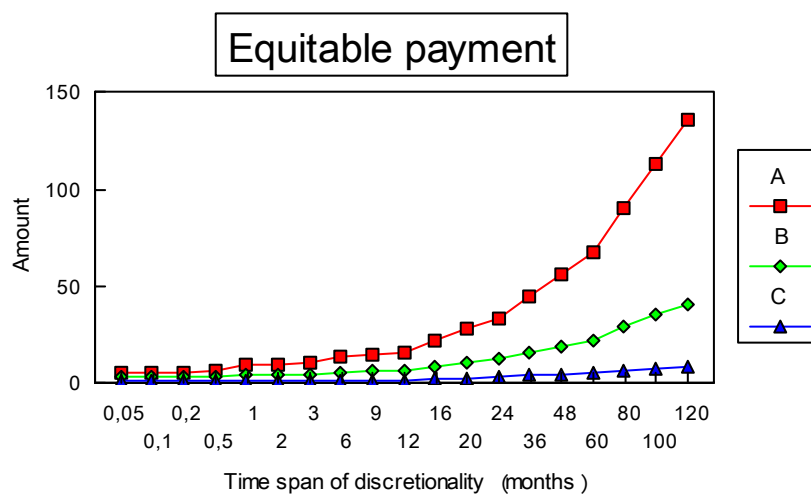
R_e = equitable payment
λ = corresponding time span of discretionality
R_0 = equitable payment for a work whose time span of discretionality is near to zero (minimum wage in the considered country)
The term λ_0 is a parameter depending to the general economic level of the country considered

The actual values for R_e, R_0 and λ_0 are the result of a statistical investigation and data collection.

According to the theory, if the above conditions are met, there should be no need to relate the payment to the performance since people should be enough motivated to give the best performance. However, the last point should be verified with reference to the updated situation of the labor market.

The curve shows the equitable payment relevant to three different countries. It is worthy to note that "A" is a high economic level country, the level of the wages is clearly higher and a higher differential is accepted, as a matter of fact the ratio of the maximum wage to the minimum wage is about 24; "B" is a medium economic level country; the ratio of the maximum wage to the minimum

is about 11; "C" is a poor country, the level of wages is clearly lower and the differential is barely accepted, as a matter of fact the ratio of the maximum wage to the minimum wage is about 6.

Some investigations made in very poor countries, although not fully valid on statistical point of view, show that the differential is felt as scandalous; as a matter of fact the above ratio is between 2 and 3. This is a good matter to think about for politicians, trade unionist, sociologists and other concerned people

3. Further application

Time span of discretionality and related numeric parameters can be used to define

- the best relationship between the working levels of managers and their subordinates, and then the number of levels to be used in a defined organisation,
- the span of control,
- the dimension of any organisation, together with a proper work-load measurement,
- the relation between different roles that are different from the standard subordination, as usually happens in staff and line and matrix organisations. This is fundamental to identify and define the different direct and indirect relationship that are possible in any organisation, such as coordinating relationship in strong or weak matrix organisation, supervision, inspection and so on.
- The concept can be extended to identify and define relationship between roles belonging to different organisation that cooperate in a project (project organisations in engineering and construction, joint ventures and contract organisations) or belong to a group of companies.
- A further extension, subject to some limitation, is to measure work level outside a hierarchical organisation.
- Eventually, an equitable payment system should be updated and in some way related to performances, in this case a detailed research is still needed.

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