Where Has the Passion Gone?
The Dynamics of Non-Profit Workers' Passion Burnout and Intention to Leave

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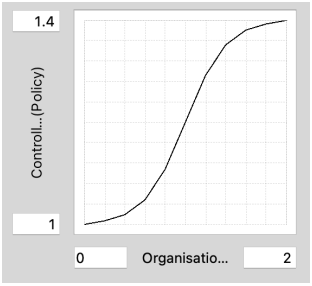
Supplementary Materials

Appendix A: Model Documentation
Appendix B: Model Testing Results
Appendix C: Simulation Experiment Report

Appendix A: Model Documentation

WORKLOAD & PRODUCTIVITY SECTOR

"Controlled_Overload_Capacity_Utilisation_(Policy)" = GRAPH(Organisational_Perception_of_Efficacy)
Points: (0.000, 1.0000), (0.200, 1.0070), (0.400, 1.0190), (0.600, 1.0480), (0.800, 1.1080), (1.000, 1.2000), (1.200, 1.2920), (1.400, 1.3520), (1.600, 1.3810), (1.800, 1.3930), (2.000, 1.4000)



UNITS: Dimensionless

DOCUMENT: The Controlled Overload Capacity Utilisation mimics the Expected Capacity Utilisation, but with smaller values and a lower maximum. This variable is used as a policy alternative that is activated when the Role Overload Policy is switched off. Maintaining the same principle, the Expected Capacity Utilisation only ever increases to a maximum of 1.4 times the normal job scope if the worker is perceived to be very competent (efficacy>1).

Desired_Hours_Worked_Per_Month = Hours_Worked_Needed_to_Clear_Workload/Desired_Time_to_Clear_Workload

UNITS: Hours/Month

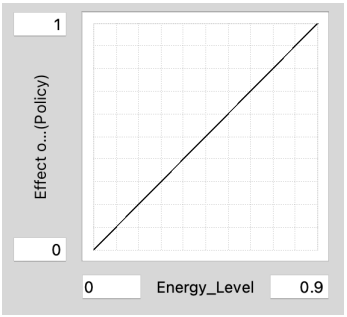
DOCUMENT: The number of working hours that is required of the worker to clear workload in order to meet their target of 1 month clearing time.

Desired_Time_to_Clear_Workload = 1

UNITS: Months

DOCUMENT: The target for how soon the worker desires to clear everything in the backlog. The assumption here is that the worker is a "highballer" and very passionate; hence always hoping to clear the backlog within a month.

"Effect_of_Energy_on_Maximum_Hours_Worked_(Policy)" = GRAPH(Energy_Level)
Points: (0.0000, 0.000), (0.0900, 0.100), (0.1800, 0.200), (0.2700, 0.300), (0.3600, 0.400), (0.4500, 0.500), (0.5400, 0.600), (0.6300, 0.700), (0.7200, 0.800), (0.8100, 0.900), (0.9000, 1.000)

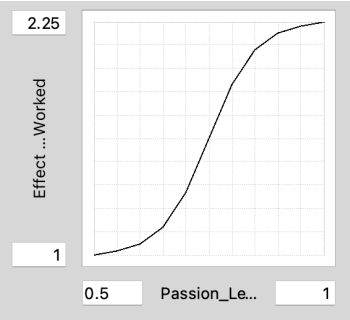


UNITS: Dimensionless

DOCUMENT: This variable is the multiplier on the hours worked adjustment above the normal working hours given the worker's energy level. It is activated only in the policy scenario when the worker takes stocks of the energy level and adjust their willingness to work downwards as they become more and more fatigued. The idea is to test a policy where the worker manages their energy level and preventing from collapsing completely.

The relationship is assumed to be linear. When the worker is completely drained (energy level =0), they will adjust their working hours to zero regardless of the passion level. This represents taking a break from work (i.e. annual leave). The willingness to work is then adjusted linearly upwards to 1 at 0.9 energy level. Here it is assumed that above 90% of energy, and individual will be physically capable of working at the full hours worked adjustment dictated by passion level.

Effect_of_Passion_on_Maximum_Hours_Worked = GRAPH(Passion_Level)
Points: (0.5000, 1.000), (0.5500, 1.022), (0.6000, 1.059), (0.6500, 1.149), (0.7000, 1.336), (0.7500, 1.625), (0.8000, 1.914), (0.8500, 2.101), (0.9000, 2.191), (0.9500, 2.228), (1.0000, 2.250)

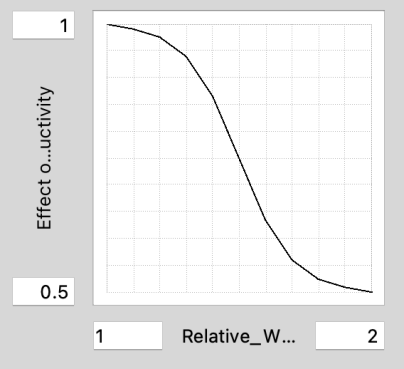


UNITS: Dimensionless

DOCUMENT: This variable is the multiplier on the hours worked adjustment above the normal working hours given the worker's passion level. The idea is that the more passionate the worker is, the more willing they are to work beyond the standard working hours.

When the worker's passion level is 0.5 or less, then they are only willing to work the standard work week and nothing more. This is derived based on logic, if I do not feel passionate, I will not work beyond remunerated hours. As passion level increases above 0.5, the willingness to work beyond the norm increases increasingly. However, there is a limit to the growth in multiplier: in this case, 2.25 times the normal which is 360 hours/month. This serves as the maximum practical limit which is assumed as working a total of 12 hours a day for every day of the month. Hence, the willingness increases decreasingly towards the maximum limit as the passion level increases to maximum.

Effect_of_Work_Overload_on_Productivity = GRAPH(Relative_Workload_Level)
Points: (1.000, 1.0000), (1.100, 0.9910), (1.200, 0.9760), (1.300, 0.9400), (1.400, 0.8660), (1.500, 0.7500), (1.600, 0.6340), (1.700, 0.5600), (1.800, 0.5240), (1.900, 0.5090), (2.000, 0.5000)



UNITS: Dimensionless

DOCUMENT: This variable is the stressor on the normal productivity of the worker given the perceived work overload. When the ratio is more than 1, the workload is deemed to be practically impossible, and as such the worker is distressed and loses their motivation to work at normal productivity levels. Hence, their productivity decreases increasingly as the ratio goes above 1. As the ratio approaches 2, the worker's productivity decreases decreasingly to a minimum of 0.5. This minimum is assumed based on experience and reason. The worker cannot completely decrease their productivity as they still have to show up for work. Instead, they become more likely to work at half the productivity level by doing tasks more slowly or be distracted with other non-work related activities at work, such as the use of social media.

Energy_Level(t) = Energy_Level(t - dt) + (Energy_Recovery - Energy_Depletion) * dt

INIT Energy_Level = 1

UNITS: Dimensionless

DOCUMENT: This stock represents the energy level of the worker at any point in time. It is accumulated by Energy Recovery and depleted by Energy Depletion. The worker is assumed to be full of energy at the start of the time horizon. Hence, the initial value is 1, meaning the Energy level is at maximum at 100%.

INFLOWS:

Energy_Recovery = Normal_Recovery*Limit_to_Recovery*Hours_Worked_Effect_on_Recovery

UNITS: Dimensionless/Month

DOCUMENT: This inflow represents the rate at which the worker recovers their energy per month. It is given as a normal depletion recover rate multiplied by a stressor from Hours worked as well as the limit to recovery. This formulation is adapted from Homer's (1985) burnout model.

OUTFLOWS:

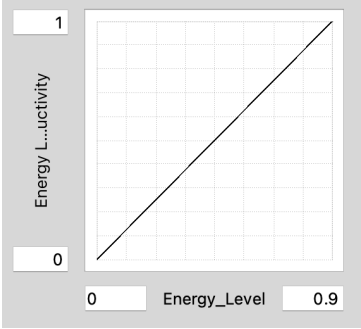
Energy_Depletion = Normal_Depletion*Limit_to_Depletion*Hours_Worked_Effect_on_Depletion

UNITS: Dimensionless/Month

DOCUMENT: This outflow represents the rate at which the worker depletes their energy per month. It is given as a normal depletion rate multiplied by a stressor from Hours worked as well as the limit to depletion. This formulation is adapted from Homer's (1985) burnout model.

Energy_Level_Effect_on_Productivity = GRAPH(Energy_Level)

Points: (0.0000, 0.000), (0.1125, 0.125), (0.2250, 0.250), (0.3375, 0.375), (0.4500, 0.500), (0.5625, 0.625), (0.6750, 0.750), (0.7875, 0.875), (0.9000, 1.000)

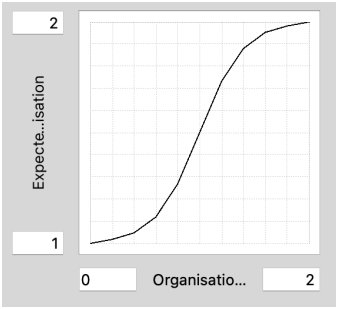


UNITS: Dimensionless

DOCUMENT: This variable is the stressor on the normal productivity of the worker given their energy level at any point in time. The relationship is assumed to be linear, and is adapted from Homer's (1985) burnout model. When the worker is completely drained (energy level =0), their productivity is 0. They are literally too exhausted to work. The worker's productive output is then adjusted linearly upwards to 1 (i.e. normal productivity) at 0.9 energy level. Here it is assumed that above 90% of energy, and individual will be physically capable of working at normal productivity - an assumption that is different from Homer's model.

Expected_Capacity_Utilisation = GRAPH(Organisational_Perception_of_Efficacy)

Points: (0.000, 1.000), (0.200, 1.018), (0.400, 1.0474), (0.600, 1.119), (0.800, 1.269), (1.000, 1.500), (1.200, 1.731), (1.400, 1.880), (1.600, 1.953), (1.800, 1.982), (2.000, 2.000)

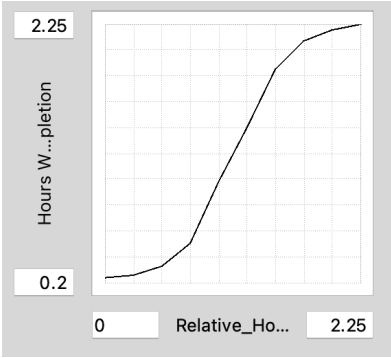


UNITS: Dimensionless

DOCUMENT: The Expected Capacity Utilisation represents the extent to which the Organisation expands the worker's job scope given their perception of the worker's efficacy at any point in time.

When the organisation perceived the worker to be average (efficacy=1), then organisation adds 1.5 times the normal job scope to the worker's workload. This value was chosen to represent the situation of nonprofits where they are often under-resourced and understaffed, thus having the propensity to overwork their employees as a default. When the efficacy is less than 1, then the employee is deemed incompetent, and their expected utilisation decreases decreasingly from 1.5 to 1 (i.e. they are just expected to just do their normal job scope). If the worker is perceived to be very effective at their job (efficiacy >1), then the organisation quickly expands their job scope up to a maximum of 2 (i.e. the person is expected to do a whole other person's job).

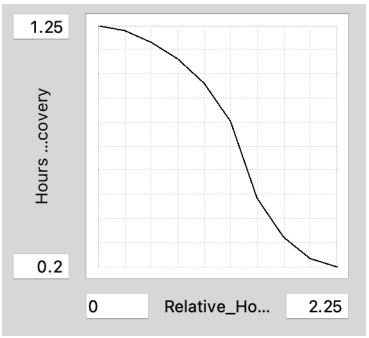
Hours_Worked_Effect_on_Depletion = GRAPH(Relative_Hours_Worked)
Points: (0.000, 0.240), (0.250, 0.260), (0.500, 0.331), (0.750, 0.512), (1.000, 1.000), (1.250, 1.430), (1.500, 1.893), (1.750, 2.118), (2.000, 2.205), (2.250, 2.250)



UNITS: Dimensionless

DOCUMENT: This variable is the multiplier or stressor on the normal energy depletion rate. The idea is that the more you work above the normal, the more you deplete your energy above the normal (vice versa).
When the Relative Hours Worked is 1, then there is no added stress on the normal energy depletion rate. When the ratio is more than 1, the energy depletion rate is stressed above the normal rate to a maximum factor of 2.25. The maximum is set at 2.25 since the ratio will not go above this value given the maximum practical limit of hours worked assumed to be 360 hours. The stress factor increases decreasingly towards this maximum. When the Relative Hours Worked is less than 1, then the stress from normal working life on the normal depletion is consequently reduced. Hence, the effect of hours worked (or the stressor) decreases decreasingly towards 0.2 as the ratio falls below 1. The effect does not go to zero as eliminating working does not eliminate the normal energy depletion from daily life. Instead it is assumed that daily living account for about 20% of normal energy depletion.

Hours_Worked_Effect_on_Recovery = GRAPH(Relative_Hours_Worked)
Points: (0.000, 1.250), (0.250, 1.229), (0.500, 1.178), (0.750, 1.106), (1.000, 1.000), (1.250, 0.833), (1.500, 0.499), (1.750, 0.329), (2.000, 0.236), (2.250, 0.200)



UNITS: Dimensionless

DOCUMENT: This variable is the multiplier or stressor on the normal energy recovery rate. The idea is that the more you work above the normal, the less you are able to recover normally given the added stress (vice versa).

When the Relative Hours Worked is 1, then there is no added stress on the normal energy recovery rate. When the ratio is more than 1, the energy recovery rate is stressed and thus brought below the normal rate. The effect decreases decreasingly to 0.2 as the ratio increases above 1. It does not go to 0 as it is assumed that the worker is still able to get some rest from sleeping, and thus is able to recover somewhat up to 20% of their normal energy recovery rate. When the ratio is less than 1, then, the normal energy recovery rate is able to increase decreasingly towards a maximum of 1.25 of it's normal. The maximum is set at 1.25 to imply a full recovery of 100% since the normal recovery rate is 0.8.

Hours_Worked_Needed_to_Clear_Workload = Time_Needed_to_Clear_Workload*Normal_Hours_Worked_per_Month

UNITS: Hours

DOCUMENT: Given that the workers perceives the number of months worth of tasks that they have to clear, they now calculate how many total work hours is needed from them to clear the backlog.

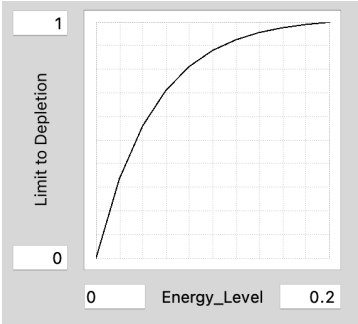
Hours_Worked_per_Month(t) = Hours_Worked_per_Month(t - dt) + (Hours_Adjustment) * dt
INIT Hours_Worked_per_Month = Normal_Hours_Worked_per_Month
UNITS: Hours/Months
DOCUMENT: This stock represents the actual number of hours the worker worked per month at a certain number point in time. It accumulates the adjustment of the number of hours worked per month to the desired number.

INFLOWS:
Hours_Adjustment = (Maximum_Desired_Hours_Worked_Per_Month-Hours_Worked_per_Month)/Time_to_Adjust_Hours_Worked
UNITS: Hours/Months/Months
DOCUMENT: This bi-flow adjusts the number of actual hours worked per month to the desired number of hours worked per month over a certain adjustment time. If the current working hours per month is less than desired, it adjusts the hours worked upwards. If the current working hours is more than the desired, it adjusts the hours worked downwards. In other words, it has an explicit goal of equilibrating the actual hours worked to the desired hours worked.

Initial_Workload = Normal_Productivity_per_Month*Job_Coverage
UNITS: Tasks
DOCUMENT: The initial number of tasks (workload) the worker has to clear is the normal productivity per month multiplied by the job coverage. Here, it is assumed that the initial job scope demands only one month's worth of normal productivity or productive output.

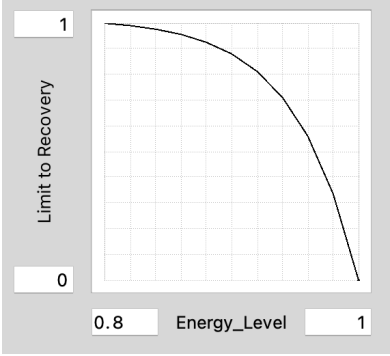
Job_Coverage = 1
UNITS: Month
DOCUMENT: Job coverage is the number of month's worth of work that is expected to be covered by the job role. I assume that organisations will on average tailor the job scope to 1 month worth of coverage, at least in the beginning.

Limit_to_Depletion = GRAPH(Energy_Level)
Points: (0.0000, 0.000), (0.0200, 0.336), (0.0400, 0.561), (0.0600, 0.712), (0.0800, 0.813), (0.1000, 0.881), (0.1200, 0.926), (0.1400, 0.957), (0.1600, 0.977), (0.1800, 0.991), (0.2000, 1.000)



UNITS: Dimensionless
DOCUMENT: This converter acts as a limit to further Energy Depletion when the Energy Level is low (<0.2). It prevents the Energy Level from going below 0 since there is no such thing as negative energy level. As the Energy level decreases below 0.2, the Energy Depletion rate is decreased increasingly towards zero. This model formulation is adapted from Homer's (1985) burnout model.

Limit_to_Recovery = GRAPH(Energy_Level)
Points: (0.8000, 1.000), (0.8200, 0.991), (0.8400, 0.977), (0.8600, 0.957), (0.8800, 0.926), (0.9000, 0.881), (0.9200, 0.813), (0.9400, 0.712), (0.9600, 0.561), (0.9800, 0.336), (1.0000, 0.000)



UNITS: Dimensionless

DOCUMENT: This converter acts as a limit to further Energy Recovery when the Energy Level is high(>0.8). It prevents the Energy Level from going above 1 since the maximum is defined as 100% energy. As the Energy level increases 0.8, the Energy Recovery rate is decreased increasingly towards zero. This model formulation is adapted from Homer's (1985) burnout model.

Maximum_Acceptable_Workload_Level = Practical_Limit_to_Hours_Worked*Normal_Productivity_per_Hour

UNITS: Tasks

DOCUMENT: The maximum acceptable workload level is given as the maximum possible number of hours the worker could practically work per month multiplied by the normal productivity per hour. It serves as a mental representation of the maximum number of the tasks the worker could tolerate, beyond which is impossible to be cleared in a month.

Maximum_Desired_Hours_Worked_Per_Month = (1-SWITCH_Adjustment_from_Energy_Policy)*MIN(Desired_Hours_Worked_Per_Month, Normal_Hours_Worked_per_Month*Effect_of_Passion_on_Maximum_Hours_Worked) + SWITCH_Adjustment_from_Energy_Policy*MIN(Desired_Hours_Worked_Per_Month, Normal_Hours_Worked_per_Month*Effect_of_Passion_on_Maximum_Hours_Worked*"Effect_of_Energy_on_Maximum_Hours_Worked_(Policy)")

UNITS: Hours/Month

DOCUMENT: Despite desiring to clear the workload within the target time, there are always practical limits to the number of hours one can work. This converter uses a MIN function to always take the smaller of the two desired working hours: the actual desired hours or the practical limit to desired hours.

Moreover, there are two possible inputs for the practical limit. When the Adjustment from Energy Policy Switch is off, then the practical limit is given by the willingness of the worker to work above or below the normal hours given a certain passion level. When the Switch is on, then the practical limit is given by both the willingness of the worker to adjust the working hours upwards or downwards given a certain passion level AND energy level.

Normal_Depletion = 0.24

UNITS: Dimensionless/Month

DOCUMENT: The normal rate of depletion the worker experiences, living their normal social and work life. This value is a calibrated estimate based on the reference mode. Nevertheless, it is reasonable to assume the over the course of a month, without external stressors, a person normally loses about 20% of the energy.

Normal_Hours_Worked_per_Month = 40*4

UNITS: Hours/Months

DOCUMENT: The normal working hours that is demanded from the job is assumed to be the standard 40-hour work week multiplied by the number of weeks in a month.

Normal_Productivity_per_Hour = 1

UNITS: Tasks/Hours

DOCUMENT: It is assumed, for simplification, that on average a worker is normally able to produce an output of 1 task an hour. I do not discriminate for task complexity.

Normal_Productivity_per_Month = Normal_Hours_Worked_per_Month*Normal_Productivity_per_Hour
UNITS: Tasks/Months
DOCUMENT: The worker's normal productivity per month: the number of the tasks the worker can clear on average in a month. In other words, it serves as the reference point for the normal productive output in per month.

Normal_Recovery = 0.8
UNITS: dimensionless/Month
DOCUMENT: The normal rate of recovery the worker experiences, living their normal social and work life. This value is a calibrated estimate based on the reference mode. Nevertheless, it is reasonable to assume the over the course of a month, without external stressors, a person normally is able to recover about 80% of their energy.

Perceived_Workload = SMTH1(Workload_Level, Time_to_Perceive, Workload_Level) {DELAY CONVERTER}
UNITS: Tasks
DOCUMENT: The number of tasks or workload the worker perceives they have to clear. It is assumed that the worker takes stock of the backlog every week in order to plan his weekly schedule for clearing the workload.

Practical_Limit_to_Hours_Worked = 12*30
UNITS: Hours
DOCUMENT: This serves as the maximum practical limit to working hours, which is assumed as a total of 12 hours a day for every day of the month.

Productive_Output =
Normal_Productivity_per_Hour*Hours_Worked_per_Month*Energy_Level_Effect_on_Productivity*Effect_of_Work_Overload_on_Productivity
UNITS: Tasks/Months
DOCUMENT: Productive Output is the number of tasks per month that is actually produced by the worker. It is given by the actual number of hours worked multiplied by the normal productivity as well as external stressors that affect the normal productivity.

Relative_Hours_Worked = Hours_Worked_per_Month/Normal_Hours_Worked_per_Month
UNITS: Dimensionless
DOCUMENT: This converter represents the ratio of the Hours Worked per Month and the Normal Hours Worked per Month. When the ratio is 1, then the Hours Worked per Month is at its normal rate. When the ratio is less than 1, then the Hours Worked per month, is lower than the normal rate. When the ratio is more than 1, then the Hours Worked per month, is more than the normal rate.

Relative_Workload_Level = Perceived_Workload/Maximum_Acceptable_Workload_Level
UNITS: Dimensionless
DOCUMENT: This converter is the ratio between the perceived workload and the workload the worker deems tolerable. When the ratio is less than 1, then there is no added stress on the worker as they believe that it is doable. When the ratio is more than 1, then the worker gets demotivated and deems it as an impossible workload to clear. In other words, the worker goes from eustress to distress beyond this point.

SWITCH_Adjustment_from_Energy_Policy = 0
UNITS: Dimensionless
DOCUMENT: This is a policy switch to include the effect of energy level on maximum desired hours worked in the hours adjustment. When the switch is off, the adjustment is dictated by the passion level. When the switch is on, the adjustment is dictated by both the passion level and the energy level.

SWITCH_Normal_Job_Scope = 0
UNITS: Dimensionless
DOCUMENT: This is a policy switch to initialise the model in equilibrium. When switched on, the workload addition stays constant at normal productivity levels.

SWITCH_Role_Overload_Policy = 1
UNITS: Dimensionless
DOCUMENT: This is a policy switch for swapping out the Expected Capacity Utilisation with the Controlled Overload Capacity Utilisation. When the switch is off, the Workload Addition is dictated by the Controlled Overload scenario. When the switch is on, then, it is dictated by the Baseline scenario.

Time_Needed_to_Clear_Workload = Perceived_Workload/Normal_Productivity_per_Month
UNITS: Months
DOCUMENT: This converter calculates how many months worth of work is in the workload backlog that has yet to be cleared by the worker.

Time_to_Adjust_Hours_Worked = 1/4
UNITS: Months
DOCUMENT: The adjustment time taken for the worker to adjust the number of hours worked per month. It denotes how quickly they adjust the working hours. In this case, it is assumed to be 1 week, meaning the worker adjusts the working hours to the desired hours on a weekly basis.

Time_to_Perceive = 1/4
UNITS: Months
DOCUMENT: The delay time for the worker to perceive the amount of workload they have, the amount of output they have produced as well as make comparisons and judgments on such matters is assumed to be 1 week. The idea is that the worker reflects on their progress and feelings related to that on a weekly basis.

Workload_Level(t) = Workload_Level(t - dt) + (Workload_Addition - Workload_Removal) * dt
INIT Workload_Level = Initial_Workload
UNITS: Tasks
DOCUMENT: The cumulative number of tasks that sits on the worker's desk or backlog that has to be cleared by them. It is accumulated by the Workload Addition, and decreased by the Workload Removal.

INFLOWS:
Workload_Addition = IF SWITCH_Normal_Job_Scope=0 THEN SWITCH_Role_Overload_Policy* Normal_Productivity_per_Month *Expected_Capacity_Utilisation + (1-SWITCH_Role_Overload_Policy)*Normal_Productivity_per_Month*"Controlled_Overload_Capacity_Utilisation_(Policy)" ELSE Normal_Productivity_per_Month
UNITS: Tasks/Months
DOCUMENT: This inflow is the rate at which the worker receives additional work each month.
When the Normal Job Scope Switch is turned on, then the Workload Addition is simply the normal productivity per month, which represents the normal tasks expected from them as part of their usual job scope. When this Switch is turned off, then the worker's Work Addition is determined by a certain capacity utilisation multiplied by the normal productivity.
When the Role Overload Policy Switch is turned on, then the worker experiences role overload as per the baseline scenario. Here the workload addition is determined by the normal productivity multiplied by the Expected Capacity Utilisation, denoting an expansion of the job scope above normal.
When the Role Overload Policy Switch is turned off, then the worker experiences a controlled overload as per the Controlled Overload scenario. Here, the workload addition is determined by the normal productivity multiplied by the Controlled Overload Capacity Utilisation, denoting an a more measured expansion of the job scope above then normal.

OUTFLOWS:
Workload_Removal = Productive_Output
UNITS: Tasks/Months
DOCUMENT: This outflow is the rate at which the worker clears their workload and is simply given by the worker's productive output.

ORGANISATIONAL JUSTICE SECTOR

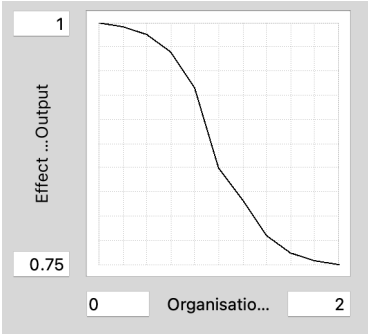
Colleague's_Productive_Output = SWITCH_Colleague's_Output_Erosion*(Normal_Productivity_per_Month*Effect_on_Colleague's_Output) + (1-SWITCH_Colleague's_Output_Erosion)*Normal_Productivity_per_Month

UNITS: Tasks/Months

DOCUMENT: The typical colleague's productive output is given as the normal productivity level multiplied by the effect of the worker's efficacy on the colleague's output – when the colleague's output erosion switch is turned on. This simulates a scenario where the colleagues are lazy and adjust their productivity according to their perceptions of the passionate worker's efficacy.

When the switch is off, the erosion effect is nullified and the productive output is constant at normal level.

Effect_on_Colleague's_Output = GRAPH(Organisational_Perception_of_Efficacy)
Points: (0.000, 1.0000), (0.200, 0.9960), (0.400, 0.9880), (0.600, 0.9700), (0.800, 0.9330), (1.000, 0.8500), (1.200, 0.8170), (1.400, 0.7800), (1.600, 0.7620), (1.800, 0.7540), (2.000, 0.7500)



UNITS: Dimensionless

DOCUMENT: The variable represents the erosion of the typical colleague's productive output as a response to the perception of the passionate worker's efficacy. The main assumption here is that the typical colleague is lazy and prefers to coast through if given the chance.

When the worker's efficacy is perceived to be 1 (average), then colleague work only at 85% of normal productive level. The assumption is that there is another average worker who could possibly pick up the slack. When the worker's efficacy is less than 1, and then the colleague increases their productivity decreasingly back towards normal productive level. However, if the worker is deemed to be very competent (efficacy >1), then the colleague decrease their productivity decreasingly to a minimum of 75% the normal level.

Increment = 0.1/12

UNITS: Dimensionless/Month

DOCUMENT: The monthly increment to wages, calculated from the 10% annual wage increment.

Indicated_Organisational_Injustice_Level = Total_Injustice_Adjustment*Passion_Effect_on_Injustice

UNITS: Dimensionless

DOCUMENT: The indicated organisational injustice level is simply the total injustice adjustment from all three factors at any one point in time, mediated by the effect of passion on injustice – minimising the effect of injustice when the passion level is high.

Initial_Median_Salary = 3500

UNITS: SGD/Month

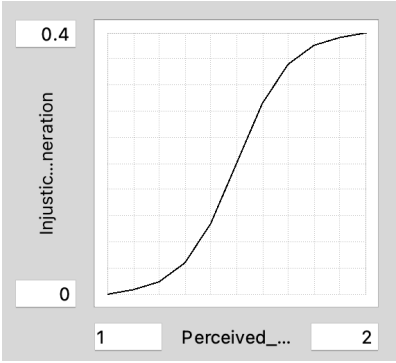
DOCUMENT: The median salary of a fresh graduate in Singapore at that point in time.

Initial_Salary = IF SWITCH_Equilibrium_Salary=1 THEN 3500 ELSE 2800

UNITS: SGD/Month

DOCUMENT: The initial salary at which the worker accepted the job. This value is given from my personal experience. However, when the switch is on, the value matches the median salary.

Injustice_Adjustment_from_Perceived_Unfair_Remuneration = GRAPH(Perceived_Relative_Utilisation)
Points: (1.000, 0.0000), (1.100, 0.0070), (1.200, 0.0190), (1.300, 0.0480), (1.400, 0.1080), (1.500, 0.2000), (1.600, 0.2920), (1.700, 0.3520), (1.800, 0.3810), (1.900, 0.3930), (2.000, 0.4000)

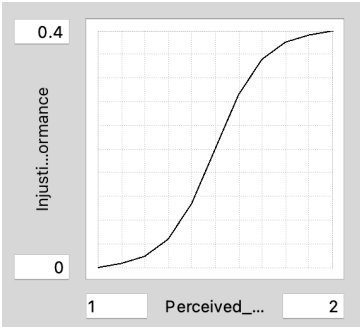


UNITS: Dimensionless

DOCUMENT: This variable defines the amount of injustice that is experienced for a certain value of perceived relative utilisation.

When the relative utilisation is more than 1, the worker experiences distributive injustice because they are being made to work more than their normal job scope. It is considered a form of exploitation since the expansion of the job scope is not met with an increase in wages. Hence, the worker feels they are being unfairly remunerated. Distributive Injustice from Relative Utilisation is conceptualised as contributing to a maximum of 40% of total injustice perceived. Hence, the injustice felt increases increasingly initially and then increases decreasingly to a maximum of 0.4 when the relative performance is 2.

Injustice_Adjustment_from_Relative_Performance = GRAPH(Perceived_Relative_Performance)
Points: (1.000, 0.0000), (1.100, 0.0070), (1.200, 0.0190), (1.300, 0.0480), (1.400, 0.1080), (1. 500, 0.2000), (1.600, 0.2920), (1.700, 0.3520), (1.800, 0.3810), (1.900, 0.3930), (2.000, 0.4000)

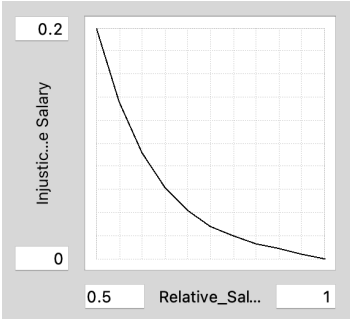


UNITS: Dimensionless

DOCUMENT: This variable defines the amount of injustice that is experienced for a certain value of perceived relative performance.

When the relative performance is more than 1, the worker experiences procedural injustice because they are being made to work harder than the colleagues. It is seen as a form of mismanagement of the organisation in managing lazy colleagues, and therefore decreasing the worker's morale. Procedural Injustice from Relative Performance is conceptualised as contributing to a maximum of 40% of total injustice perceived. Hence, the injustice felt increases increasingly initially and then increases decreasingly to a maximum of 0.4 when the relative performance is 2.

Injustice_Adjustment_from_Relative_Salary = GRAPH(Relative_Salary)
Points: (0.5000, 0.2000), (0.5500, 0.1360), (0.6000, 0.0920), (0.6500, 0.0620), (0.7000, 0.0420), (0.7500, 0.0280), (0.8000, 0.0200), (0.8500, 0.0130), (0.9000, 0.0090), (0.9500, 0.0040), (1.0000, 0.0000)



UNITS: Dimensionless

DOCUMENT: This variable defines the amount of injustice that is experienced for a certain value of relative salary to the median.

When the relative utilisation is less than 1, the worker experiences distributive injustice since they are underpaid relative to their cohort in other organisations or industry. Hence, it represents underemployment. Distributive Injustice from Relative Salary is conceptualised as contributing to a maximum of 20% of total injustice perceived. This has a lower weight than the other two sectors, since the worker already knew of this problem, but nevertheless accepted the job offer. The injustice felt increases exponentially when the relative salary is less than 1. The lower bound of the relative salary is set at 0.5, because we do not reasonably expect anyone to accept a job offer that pay less than half the median salary.

Median_Monthly_Salary = Initial_Median_Salary+RAMP(Initial_Median_Salary*Increment, 0)

UNITS: SGD/Months

DOCUMENT: This converter calculates the monthly median salary at any point in time, given the increment over time.

Monthly_Salary = (Initial_Salary+RAMP(Initial_Salary*Increment, 0))

UNITS: SGD/Month

DOCUMENT: This converter calculates the monthly salary of the worker at any point in time, given the increment over time.

Organisational_Injustice_Level(t) = Organisational_Injustice_Level(t - dt) + (Adjustment_in_Injustice_Level) * dt

INIT Organisational_Injustice_Level = Indicated_Organisational_Injustice_Level

UNITS: Dimensionless

DOCUMENT: This stock represents the Organisational Injustice level perceived by the worker at any point in time. It is accumulated by the Adjustment in Injustice Level over an adjustment time.

INFLOWS:

Adjustment_in_Injustice_Level = (Indicated_Organisational_Injustice_Level-Organisational_Injustice_Level)/Time_to_Adjust_Organizational_Injustice

UNITS: Dimensionless/Month

DOCUMENT: This bi-flow adjusts the Organisational Injustice Level to an Indicated level over a certain adjustment time. If the current level is less than the indicated level, it adjusts the worker's perceived injustice upwards. If the current level is more than the indicated level, it adjusts the worker's perceived injustice downwards. In other words, it has an explicit goal of equilibrating the Organisational Injustice Level to the Indicated Level.

Organisational_Perception_of_Efficacy(t) = Organisational_Perception_of_Efficacy(t - dt) + (Change_in_Organisational_Perception) * dt

INIT Organisational_Perception_of_Efficacy = 0

UNITS: Dimensionless

DOCUMENT: This stock represents the organisation's perception of the worker's perceived professional efficacy, and thus is an informational stock. The initial perception is 0, since the organisation has yet to form an opinion of the worker at the beginning.

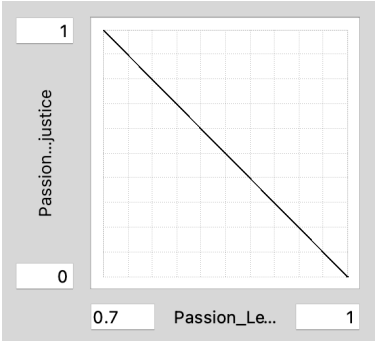
INFLOWS:

Change_in_Organisational_Perception = (Perceived_Professional_Efficacy-Organisational_Perception_of_Efficacy)/Time_for_Others_to_Perceive

UNITS: Dimensionless/Month

DOCUMENT: This bi-flow updates the Organisation's perception with new information on the Professional Efficacy of the worker over a delay time. It has an explicit goal of updating outdated information with a more current one.

Passion_Effect_on_Injustice = GRAPH(Passion_Level)
Points: (0.7000, 1.000), (0.7300, 0.900), (0.7600, 0.800), (0.7900, 0.700), (0.8200, 0.600), (0.8500, 0.500), (0.8800, 0.400), (0.9100, 0.300), (0.9400, 0.200), (0.9700, 0.100), (1.0000, 0.000)



UNITS: Dimensionless

DOCUMENT: This variable minimises the perceived organisational injustice whenever the Passion level is high (above 0.7). The relationship is assumed to be linear. When the passion level is at maximum, the worker is likely to completely overlook any injustice, reducing the indicated injustice level to 0. This minimising effect, decreases as the passion level decreases, up to 0.7 when the minimising effect no longer holds.

Perceived_Colleague's_Productive_Output = SMTH1(Colleague's_Productive_Output, Time_to_Perceive, Colleague's_Productive_Output) {DELAY CONVERTER}

UNITS: Tasks/Months

DOCUMENT: The number of tasks per month perceived to have been produced by the typical colleague. This is perception is made by the worker of their colleague, and is assumed to have the same perception time since the worker is likely to compare how much they have done to their colleague as they take stock of their progress.

Perceived_Productive_Output = SMTH1(Productive_Output, Time_to_Perceive, Productive_Output) {DELAY CONVERTER}

UNITS: Tasks/Months

DOCUMENT: The number of tasks per month perceived to have produced. It is assumed that the worker takes stock of their output week.

Perceived_Professional_Efficacy = (Perceived_Productive_Output/Normal_Productivity_per_Month)

UNITS: Dimensionless

DOCUMENT: Professional Efficacy is defined as how effective a person is at their job. For this model, efficacy is assumed to be a relative measure of the worker's perceived output to the normal productivity level. It is a quantitative measure of performance, and does not discriminate for the quality of the output. When the ratio is 1, then the worker is average at their job. When the ratio is less than 1, the worker is incompetent or is performing badly at their job. When the ratio is more than 1, then the worker is very competent and is performing well.

Perceived_Relative_Performance = Perceived_Productive_Output//Perceived_Colleague's_Productive_Output

UNITS: Dimensionless

DOCUMENT: Perceived Relative Performance is the ratio of the worker's Perceived Productive Output and the Perceived Colleague's Productive Output. It represents the comparison made by the worker to judge how hard they are working relative to their colleagues. When the ratio is 1, both the worker and colleagues are working equally hard. If the ratio is more than 1, then the worker is working harder than the colleagues. If the ratio is less than 1, then the worker is less productive than their colleagues.

Perceived_Relative_Utilisation = SMTH3(Relative_Capacity_Utilisation, Time_to_Perceive, Relative_Capacity_Utilisation) {DELAY CONVERTER}
UNITS: Dimensionless
DOCUMENT: The perception of the worker of their actual relative capacity utilisation. It is assumed that the worker makes this comparison on a weekly basis.

Relative_Capacity_Utilisation = Workload_Addition/Normal_Productivity_per_Month
UNITS: Dimensionless
DOCUMENT: Perceived Relative Performance is the ratio Work Addition per month and the Normal productivity per month. It represents the comparison made by the worker to judge how much more expected of them as compared to the normal job scope. When the ratio is 1, then the worker is expected to work normally. If the ratio is more than 1, then the worker's job scope has expanded above the normal. If the ratio is less than 1, then the worker's job scope is reduced below the normal.

Relative_Salary = Monthly_Salary/Median_Monthly_Salary
UNITS: Dimensionless
DOCUMENT: The relative salary is the ratio of the worker's salary to the median salary. When the ratio is 1, then the worker is paid the median salary. This is assumed to be a fair wage. When the ratio is less than 1, then the worker is underpaid or underemployed. When the ratio is more than 1, then the worker is paid above average.

SWITCH_Colleague's_Output_Erosion = 1
UNITS: Dimensionless
DOCUMENT: This is a policy switch is used to cut out the effect of the organisation perception on colleague's productive output. When the switch is on, the Colleague erodes their productivity. When the switch is off, the Colleague's productive output is constant at normal level.

SWITCH_Equilibrium_Salary = 0
UNITS: Dimensionless
DOCUMENT: This is a policy switch is used to cut out the effect of injustice adjustment from relative salary. When the switch is on, the initial salary is equal the initial median salary.

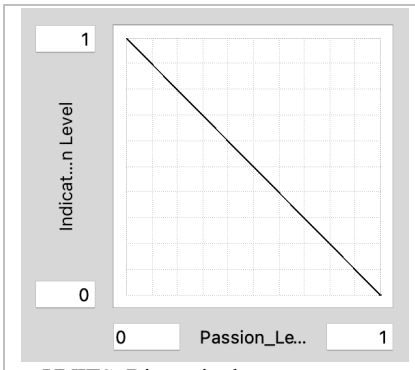
Time_for_Others_to_Perceive = 1
UNITS: Months
DOCUMENT: The delay time for the organisation to perceive the productivity of the worker. This constant is assumed to be one based on reason as most organisation have monthly staff meetings to update each other on their progress.

Time_to_Adjust_Organizational_Injustice = 1
UNITS: Months
DOCUMENT: The adjustment time taken for the worker to adjust the organisational injustice level. This is estimated to be 1 month.

Total_Injustice_Adjustment = Injustice_Adjustment_from_Relative_Performance+Injustice_Adjustment_from_Relative_Salary+Injustice_Adjustment_from_Perceived_Unfair_Remuneration
UNITS: Dimensionless
DOCUMENT: The total adjustment to indicated organisational injustice level from the three factors: relative performance, unfair remuneration and relative salary.

PASSION & TURNOVER INTENTION SECTOR

Indicated_Turnover_Intention_Level = GRAPH(Passion_Level)
Points: (0.000, 1.000), (0.100, 0.900), (0.200, 0.800), (0.300, 0.700), (0.400, 0.600), (0.500, 0.500), (0.600, 0.400), (0.700, 0.300), (0.800, 0.200), (0.900, 0.100), (1.000, 0.000)

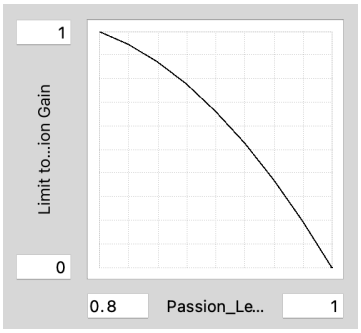


UNITS: Dimensionless

DOCUMENT: It is assumed that turnover intention is inversely correlated to passion level, whereby any drop in passion level is expected to have corollary gain in turnover intention, vice versa.

Limit_to_Passion_Gain = GRAPH(Passion_Level)

Points: (0.8000, 1.000), (0.8250, 0.946), (0.8500, 0.872), (0.8750, 0.778), (0.9000, 0.662), (0.9250, 0.528), (0.9500, 0.372), (0.9750, 0.196), (1.0000, 0.000)

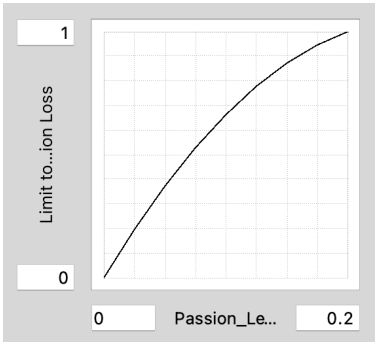


UNITS: Dimensionless

DOCUMENT: This converter acts as a limit to further Passion Gain when the Passion Level is high(>0.8). It prevents the Passion Level from going above 1 since the maximum is defined as 100%. As the Passion level increases above 0.8, the Passion Gain rate is decreased increasingly towards zero. This model formulation is adapted from Homer's (1985) burnout model.

Limit_to_Passion_Loss = GRAPH(Passion_Level)

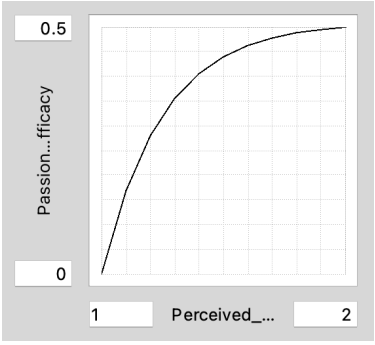
Points: (0.0000, 0.000), (0.0250, 0.196), (0.0500, 0.372), (0.0750, 0.528), (0.1000, 0.662), (0.1250, 0.778), (0.1500, 0.872), (0.1750, 0.946), (0.2000, 1.000)



UNITS: Dimensionless

DOCUMENT: This converter acts as a limit to further Passion Loss when the Energy Level is low (<0.2). It prevents the Passion Level from going below 0. As the Passion level decreases below 0.2, the Passion Loss rate is decreased increasingly towards zero. This model formulation is adapted from Homer's (1985) burnout model.

Passion_Gain_Adjustment_from_Professional_Efficacy = GRAPH(Perceived_Professional_Efficacy)
Points: (1.000, 0.0000), (1.100, 0.1680), (1.200, 0.2800), (1.300, 0.3560), (1.400, 0.4060), (1.500, 0.4400), (1.600, 0.4630), (1.700, 0.4780), (1.800, 0.4890), (1.900, 0.4950), (2.000, 0.5000)



UNITS: Dimensionless

DOCUMENT: This variable defines the amount of passion gain that is experienced for a certain value of perceived professional efficacy at any point in time.

When the perceived professional efficacy is more than 1, the worker perceives themselves to be an effective worker contributing to the social cause. In other words, the positive contribution increases the Passion level. Passion Gain from efficacy increases rapidly as efficacy increases beyond 1, and the gain slows down towards a maximum of 0.5. Here it is assumed that any point in time, the maximum gain in passion is 50%.

Passion_Level(t) = Passion_Level(t - dt) + (Passion_Gain - Passion_Loss) * dt

INIT Passion_Level = 0.8

UNITS: Dimensionless

DOCUMENT: This stock represents the Passion level of the worker at any point in time. It is accumulated by Passion Gain and depleted by Passion Loss. The worker is assumed to have a high level of passion prior to starting the job, but not maximum since they are still new to the job and sector. Hence, the initial value is estimated to be at 0.8.

INFLOWS:

Passion_Gain = ((Passion_Gain_Adjustment_from_Professional_Efficacy)/Time_to_Adjust_Passion)*Limit_to_Passion_Gain

UNITS: Dimensionless/Months

DOCUMENT: This inflow represents the rate at which the worker experiences passion gain per month. The inflow is simply the passion gain adjustment over an adjustment time, that is multiplied by the limit to prevent the passion stock from increasing beyond 1.

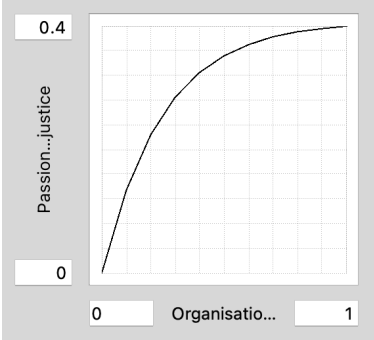
OUTFLOWS:

Passion_Loss = ((Passion_Loss_Adjustment_from_Professional_Efficacy+Passion_Loss_Adjustment_from_Organizational_Injustice)/Time_to_Adjust_Passion)*Limit_to_Passion_Loss

UNITS: Dimensionless/Months

DOCUMENT: This outflow represents the rate at which the worker experiences passion loss per month. The outflow is simply the combined passion loss adjustment over an adjustment time, that is multiplied by the limit to prevent the stock from decreasing below 0.

Passion_Loss_Adjustment_from_Organizational_Injustice = GRAPH(Organisational_Injustice_Level)
Points: (0.000, 0.0000), (0.100, 0.1340), (0.200, 0.2240), (0.300, 0.2850), (0.400, 0.3250), (0.500, 0.3520), (0.600, 0.3700), (0.700, 0.3830), (0.800, 0.3910), (0.900, 0.3960), (1.000, 0.4000)

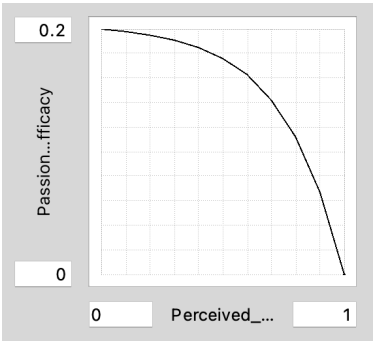


UNITS: Dimensionless

DOCUMENT: This variable defines the amount of passion loss that is experienced for a certain value of perceived organisational injustice at any point in time.

When the organisational injustice level is more than 0, it drains drains the Passion level. Passion Loss from perceived injustice increases rapidly as injustice level increases above 0, and the loss slows down towards a maximum of 0.4. Here it is assumed that any point in time, the maximum loss in Passion from organisation injustice is 40%.

Passion_Loss_Adjustment_from_Professional_Efficacy = GRAPH(Perceived_Professional_Efficacy)
Points: (0.000, 0.2000), (0.100, 0.1980), (0.200, 0.1950), (0.300, 0.1910), (0.400, 0.1850), (0.500, 0.1760), (0.600, 0.1630), (0.700, 0.1420), (0.800, 0.1120), (0.900, 0.0670), (1.000, 0.0000)



UNITS: Dimensionless

DOCUMENT: This variable defines the amount of passion loss that is experienced for a certain value of perceived professional efficacy at any point in time.

When the perceived professional efficacy is less than 1, the worker does not feel as though they are effectively contributing to the organisation as well as the cause. This drains the Passion level. Passion Loss from efficacy increases rapidly as efficacy decreases below 1, and the loss slows down towards a maximum of 0.2. Here it is assumed that any point in time, the maximum loss from efficacy is 20%. This was deemed to be an appropriate weight as it was reasonable to expect that people are likely to overestimate their achievements and underestimate their weaknesses.

Time_to_Adjust_Passion = 1

UNITS: Months

DOCUMENT: The adjustment time taken for the worker to adjust the passion level. This is estimated to be 1 month.

Time_to_Adjust_Turnover_Intention = 1

UNITS: Months

DOCUMENT: The adjustment time taken for the worker to adjust the turnover intention to the indicated level. In this case, it is assumed that the worker takes time to contemplate changes in Passion Level, whether it is a trend prior to adjusting the turnover intention. This is estimated to be 1 month based on the reference mode.

Turnover_Intention_Level(t) = Turnover_Intention_Level(t - dt) + (Adjustment_in_Turnover_Intention) * dt

INIT Turnover_Intention_Level = 0.2

UNITS: Dimensionless

DOCUMENT: This stock represents the Turnover Intention level of the worker at any point in time. It is accumulated by the Adjustment in Turnover Intention over an adjustment time. Turnover Intention is formulated as an inverse of the Passion. Hence, the initial value is taken as 0.2, given the earlier assumption that Passion starts at 0.8.

INFLOWS:

Adjustment_in_Turnover_Intention = (Indicated_Turnover_Intention_Level-Turnover_Intention_Level)/Time_to_Adjust_Turnover_Intention

UNITS: Dimensionless/Month

DOCUMENT: This bi-flow adjusts the Turnover Intention Level to an Indicated level over a certain adjustment time. If the current turnover intention is less than the indicated level, it adjusts the worker's intention upwards. If the current turnover intention is more than the indicated level, it adjusts the worker's intention downwards. In other words, it has an explicit goal of equilibrating the Turnover Intention level to Indicated Level.

Appendix B: Model Testing Results

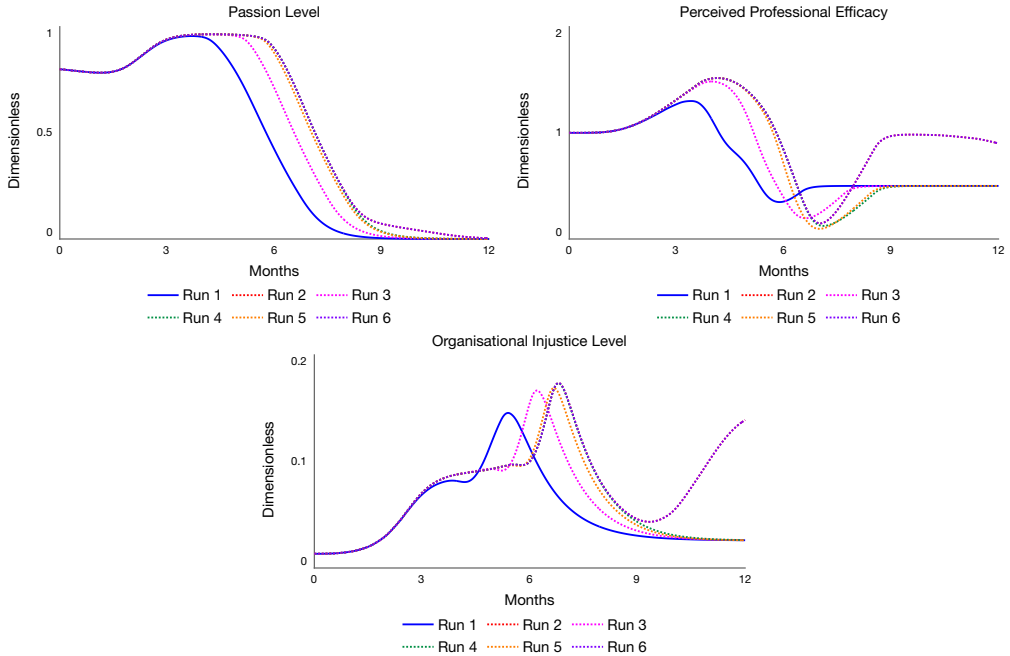
Integration Error Test

The model was tested with half (1/64) and double (1/16) time step, with two integration methods: Euler and Runge-Kutta 4. The simulation results remained the same. However, it must be noted that the shortest adjustment time in the model is 0.25 months (i.e.,1 week). This means that the minimum DT should at least be 1/8 with Euler to prevent integration errors.

Sensitivity Analysis

The model's sensitivity to all parameters and table functions was tested on the baseline scenario. For constant parameters, Sensitivity Analysis was conducted with Stella's Model Analysis Tools. Each test was configured for 6 runs with Incremental Distribution and Latin Hybercube Sampling. As for table functions, Sensitivity Analysis was performed by changing table values and simulating with comparative graphs. Given the sheer number of table functions in this model (20 to be exact), only those found to be sensitive will be presented in this section.

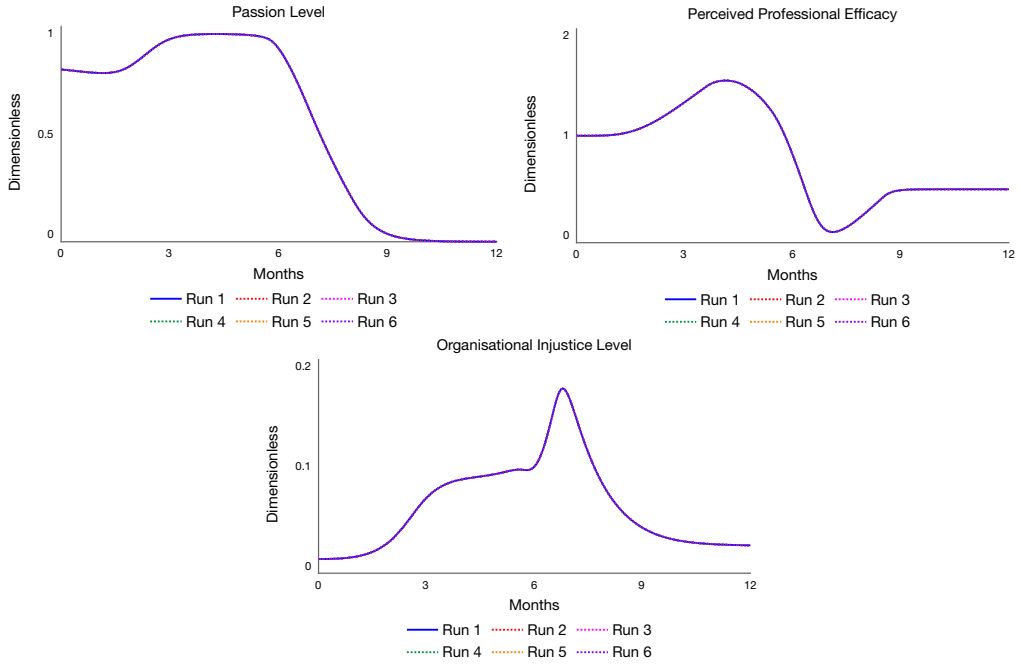
Normal Hours Worked Per Month (range: 80 – 320)



The model is moderately sensitive to this parameter, but this is to be expected as the reinforcing "C'est Impossible" loop (R8) in the model structure sets an exogeneous limit to the workload level based on the practical limit to working hours for a normal person (i.e., 12 hours a day x 30 days = 360 hours). Hence, variations in the normal hours worked per month, means variations in the distance away from this critical threshold that affects the productive output. Nevertheless, confidence of this parameter value should not be diminished as it's

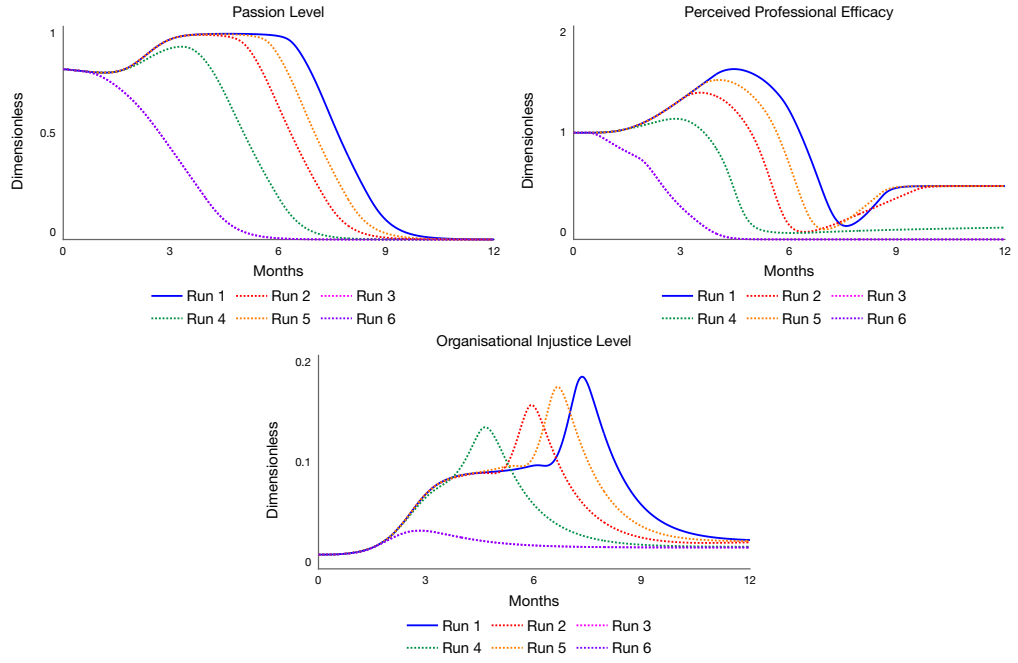
based on the simple fact that the average working hours for most parts of the world is 160 hours per month (8 hours a day x 20 working days).

Normal Productivity Per Hour (range: 0.5 – 1.5)



The model is not sensitive to this parameter, given the same pattern of behaviour.

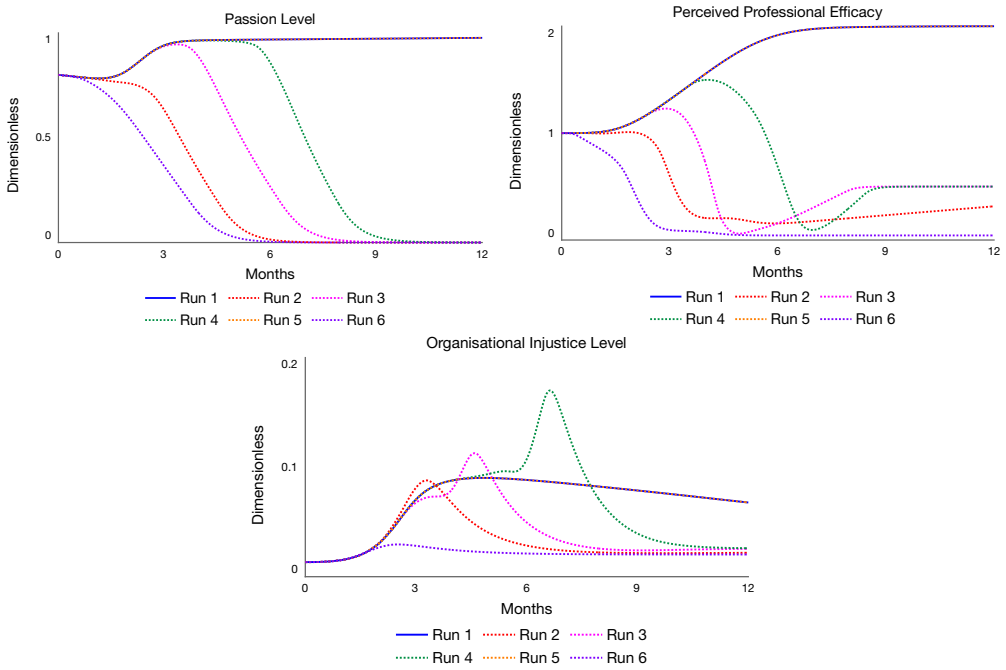
Normal Recovery (range: 0 – 1)



The model is sensitive to this parameter. This is to be expected as it determines the rate at which the Energy changes. Variations in this parameter changes how fast productivity drops as a result of exhaustion, which then feeds into the drop in professional efficacy and thus passion (Ain't No Superman loop). The value of this parameter was calibrated based on the

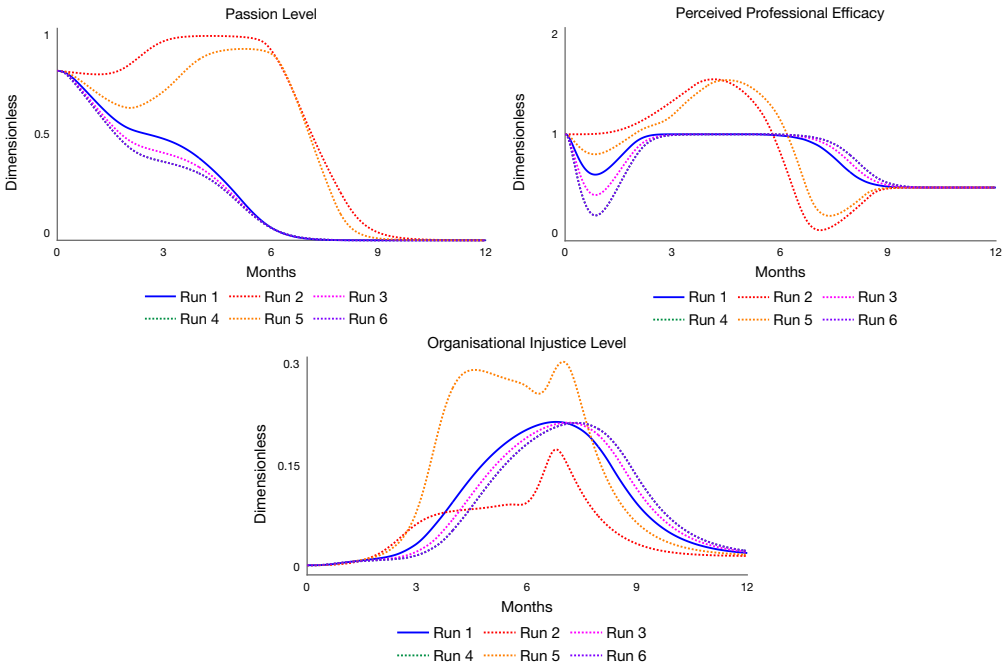
reference mode, in terms of how soon the reference individual experience physical exhaustion. For generalisation of this model, then a more accurate value should be sought.

Normal Depletion (range: 0 – 1)



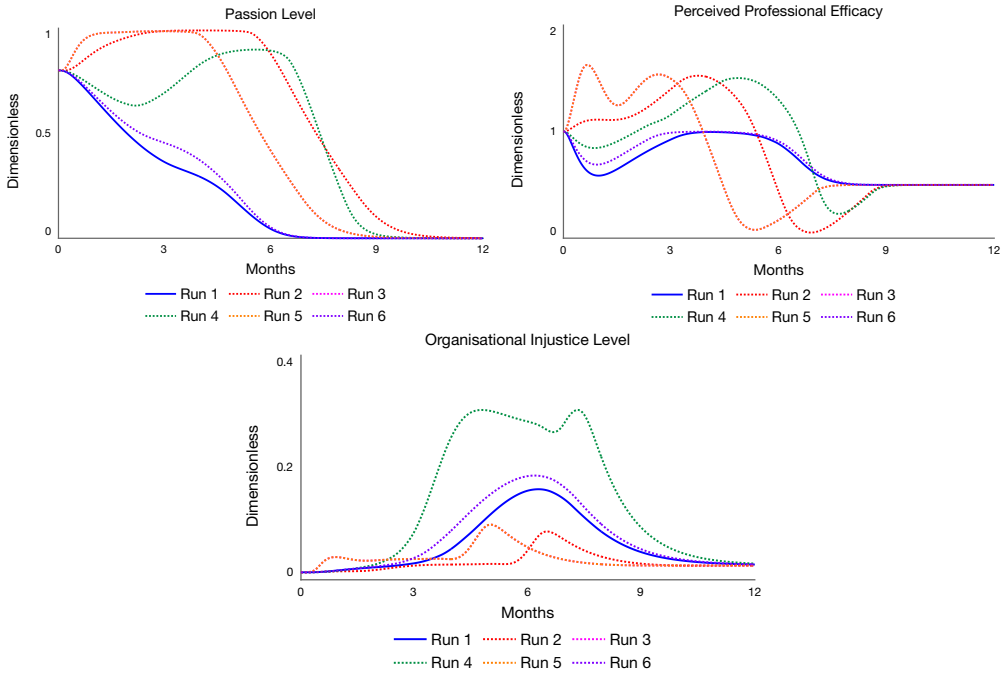
The model is sensitive to this parameter. Similar to Normal Recovery, this is to be expected as it determines the rate at which the Energy changes. The model behaviour fundamentally changes when the Normal Depletion is close to zero. In this case, the individual would be the definition of Superman since the "Ain't No Superman" mechanism would never kick in given minimal energy loss. Again, for generalisation, a more accurate value should be sought.

Job Coverage (range: 0.5 – 2)



The model is sensitive to this parameter, as it determines the initial workload. If the initial workload is less than the normal productivity level (<1), then it forces the individual to adjust the hours worked such that they are working below the normal level, which has a feedback on the perceived professional efficacy – bringing it less than 1, which drains the passion stock. The conceptualisation of passion gain is based on the high one gets from initially working harder than usual (Eustress). Hence, if a person is not challenged to work at normal level, at the very least, then it is reasonable that they lose their passion quickly. In reality, however, a passionate individual is likely to create work for themselves in this scenario (they will find something to do). This was left out of the model boundary as it was assumed that non-profit organisations are under-resourced, and therefore, will never face a situation where the workload is less than the normal level.

Desired Time to Clear Workload (range: 0.5 – 2)

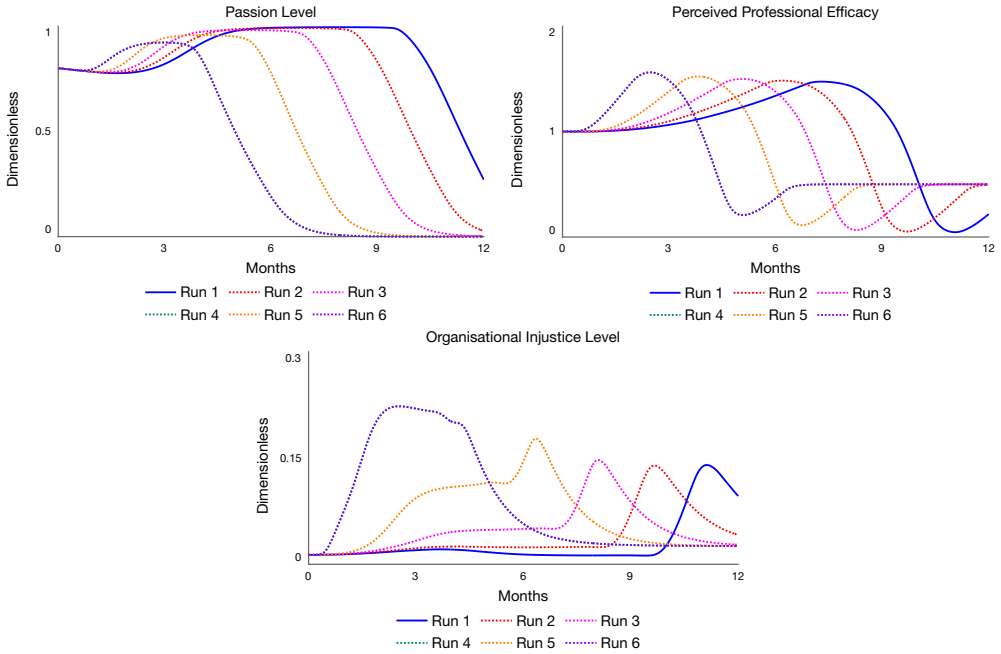


The model is sensitive to this parameter, as it determines the Desired Hours Worked Per Month. Similar to the above parameter, Job Coverage, the change in model behaviour is to be expected as it feeds back to the Passion level through Perceived Professional Efficacy. When the Desired Time to Clear the workload is more than 1, then the hours worked will be adjusted below the normal level. For passion gain, then, we expect passionate individuals to desire to clear their workload within a month or less.

Various Adjustment Times (range: 0 – 2)

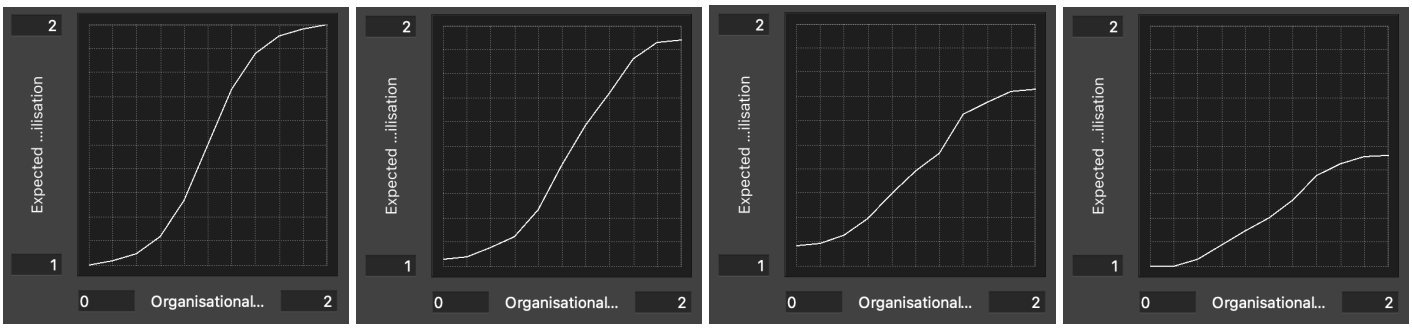
The various adjustment time parameters were tested with the above range. All the sensitivity runs produced the same pattern of behaviour, suggesting that the model is not overly sensitive to the adjustment times. The main difference was the time at which the changes in behaviour kicked in, shifting the graphs either to the left or to the right. Nevertheless, to demonstrate

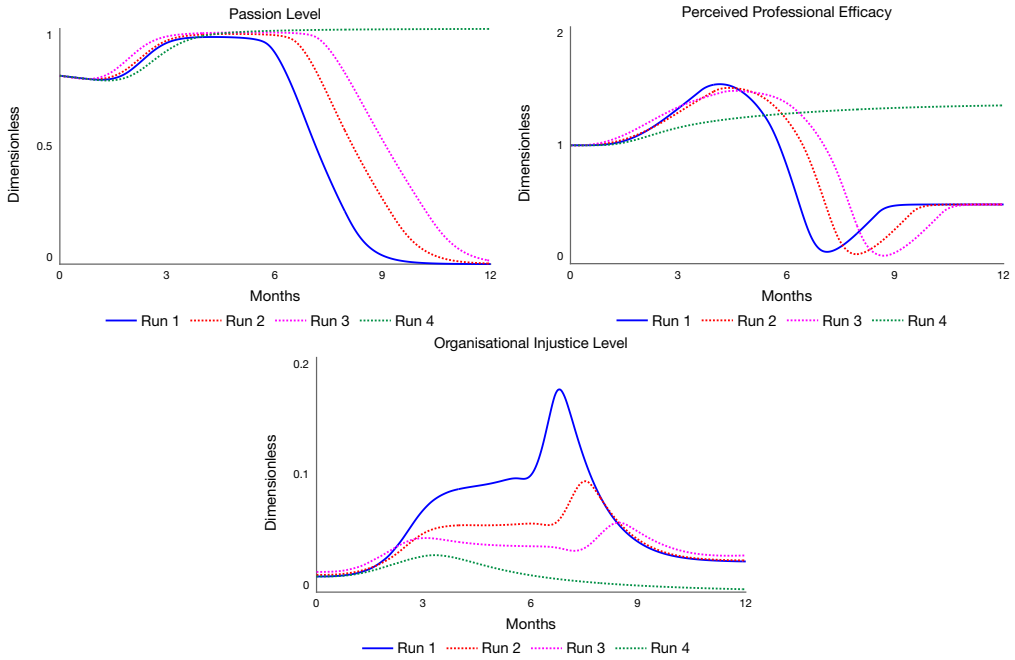
this effect, I have produced the sensitivity runs of the most sensitive of the adjustment times: Time for Others to Perceive.



The main difference in behaviour can be observed in the Organisational Injustice Level, where on run looks very different from the rest. Nevertheless, this behaviour pattern is consistent with the rest of the runs in the sense that the justice level reacts to the Passion Level. When the Passion Level drops below a critical threshold, the Passion v. Justice mechanism gets broken. Hence, the true injustice level is suppressed for a shorter time with a shorter adjustment time. In other words, the above pattern of behaviour for organisational injustice level is to be expected as the graph is shifted left or right – they are consistent with the model conceptualisation.

Expected Capacity Utilisation

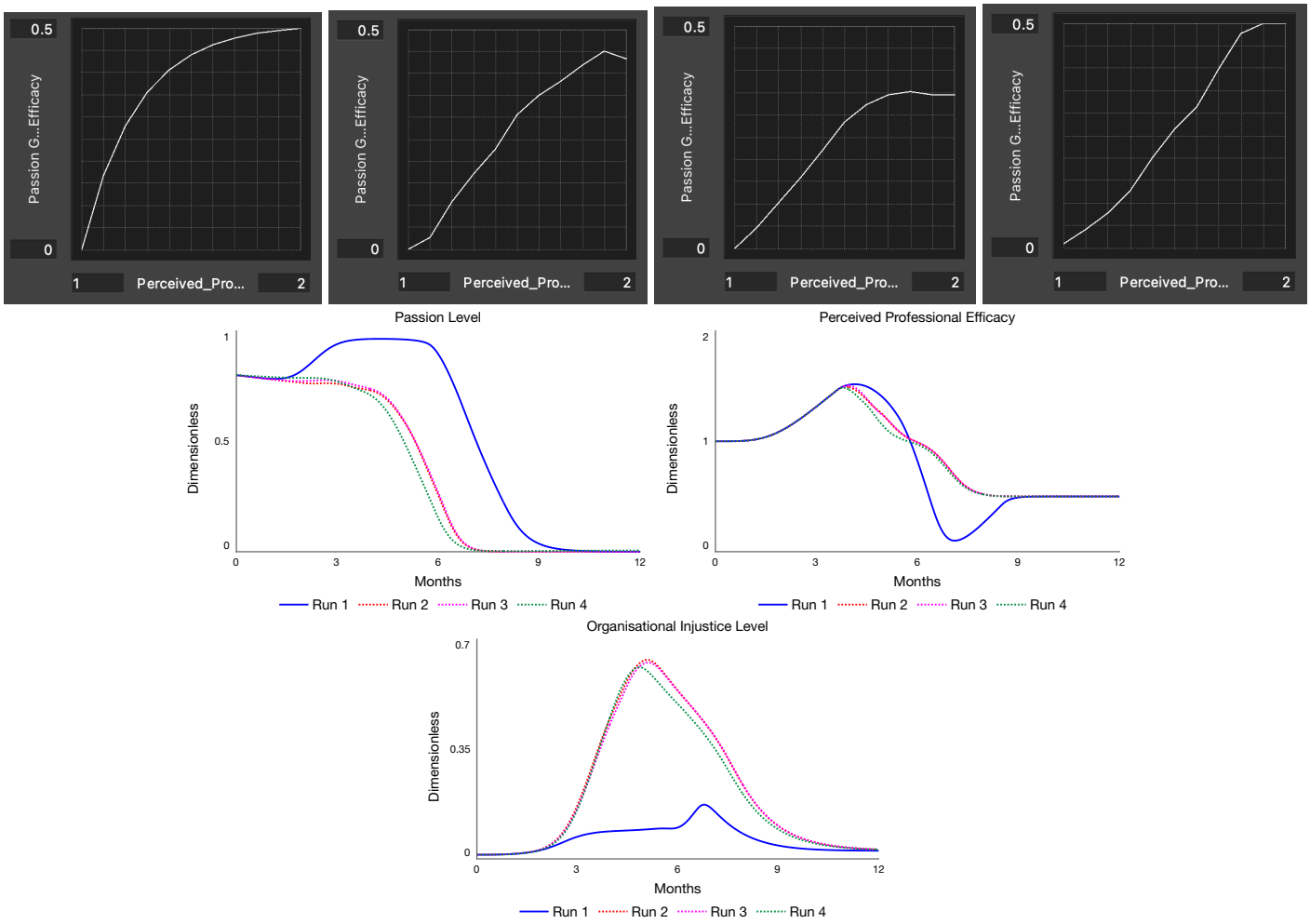




The model is sensitive to Expected Capacity Utilisation and is consistent with the model conceptualisation. The Expected Capacity Utilisation is part of the main reinforcing “Exploit the Capital” loop (R2) which is responsible for causing the overshoot and collapse behaviour of the model. It does so by increasing the workload as professional efficacy increases, beyond the capacity limit of the individuals (i.e., causing the workload level to increase beyond the practical limit for the individual to clear the workload). This sensitivity was expected and was formulated to be a leverage point in the system.

However, in initial sensitivity analyses, the behaviour mode did not change even after several rounds of testing. This kickstarted the iterative process of model building which, got me to reconsider the dynamic hypothesis to see if I was missing any other fundamental loops or structure. Eventually, I concluded that my model structure was sufficiently robust, and came back to this table function to experiment with the minimum and maximum values. After some experimentations, I found a critical tipping point in the maximum value. If the role overload is well below 1.5 at maximum, the passion level overshoots and stays at maximum without a subsequent collapse. Below this critical threshold, the workload does not exceed above the capacity limit, allowing the system to go into steady state equilibrium. Hence, this table function is an excellent candidate for policy formulation.

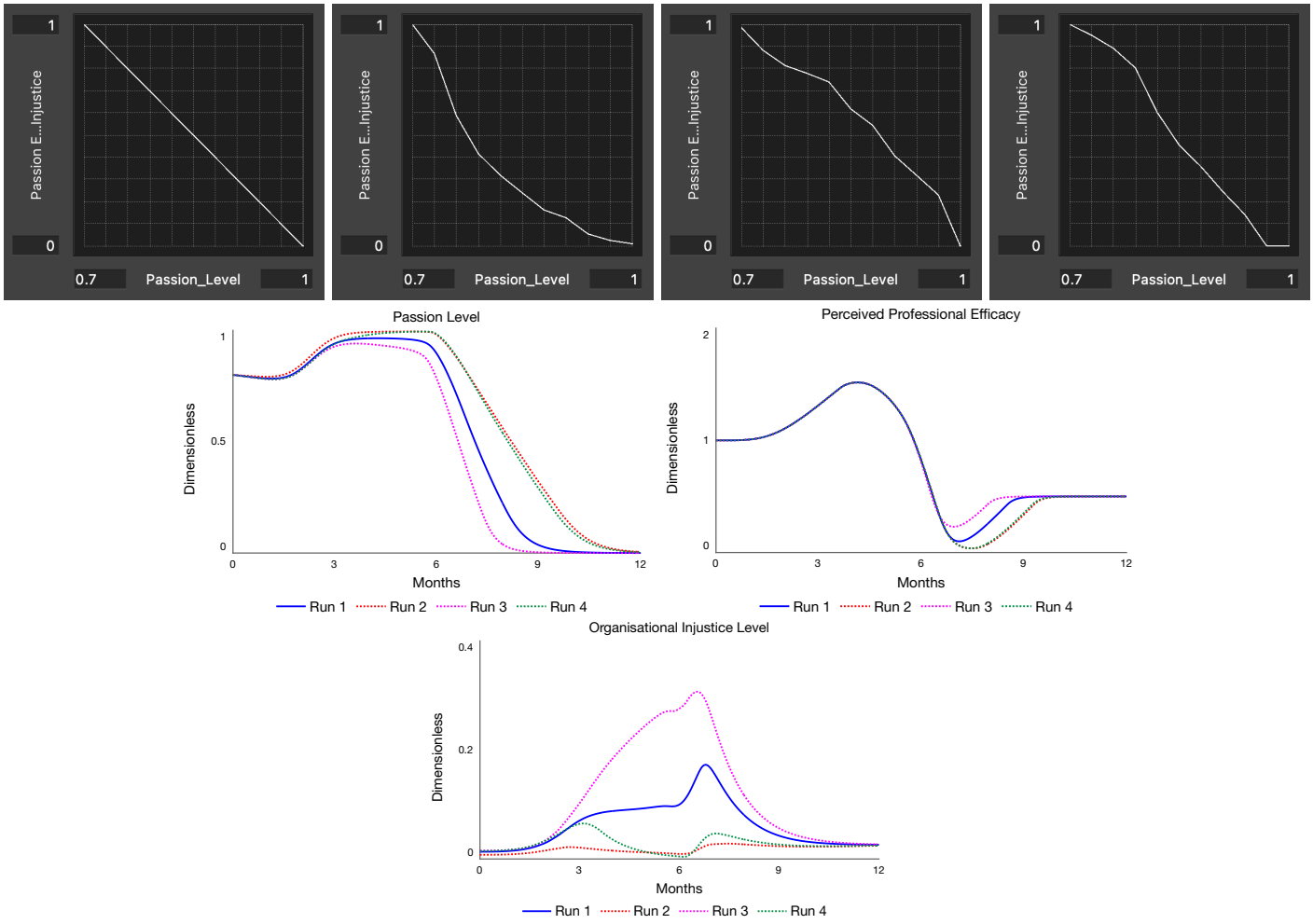
Passion Gain Adjustment from Professional Efficacy



The model is sensitive to Passion Gain Adjustment, but this is to be expected. The adjustment is formulated as an absolute increase in the Passion for a certain relative value of Professional Efficacy to the normal. Hence, changing the values will bring about a respective change in the net flow of the passion stock. When the table function is adjusted to reduce the absolute Passion Gain Adjustment, the net flow become relatively more negative, thus explaining why there is no growth before the collapse. As mentioned in the report, the purpose of this model is not to present numerically accurate adjustment in the passion and turnover intention levels – these are very soft stocks which are difficult to measure even for a single individual. Hence, the values were estimated based on reason (refer to model documentation). Nevertheless, this is a limitation of the model, which could perhaps be made more robust with estimations from qualitative data collection and analysis.

The above explanation and conclusions hold for all the table functions that has to do with absolute adjustment of soft stocks. These include the two Passion Loss Adjustments, three Injustice Adjustment and one Turnover Intention Adjustment table functions. Hence, the sensitivity analysis results for these nonlinear functions will not be presented.

Passion Effect on Injustice



The model is not significantly sensitive to this table function in the sense that the behaviour pattern is fundamentally the same, but with changes to the rate at which the collapse in Passion occurs. A similar result is observed with the Energy Level Effect on Productivity.

Appendix D: Simulation Experiment Report

This section provides the minimum simulation reporting guidelines recommended by Rahmandad & Sterman (2012).

Modelling Software: Stella Architect 2.0.1
Integration Method: Euler's Integration
DT = 1/32
Time Unites: Months
Simulation Start Time: 0
Simulation End Time: 12

Equilibrium

These values initialise the model in equilibrium condition:

Settings Sector
SWITCH Normal Job Scope = 1
SWITCH Colleague's Output Erosion = 0
SWITCH Equilibrium Salary = 1
SWITCH Role Overload Policy = 0
SWITCH Adjustment from Energy Policy = 0

Baseline Scenario

This scenario reproduces the reference mode, and the initial values are as follows:

Settings Sector
SWITCH Normal Job Scope = 0
SWITCH Colleague's Output Erosion = 1
SWITCH Equilibrium Salary = 0
SWITCH Role Overload Policy = 1
SWITCH Adjustment from Energy Policy = 0

Workload & Productivity Sector
Normal Productivity per Hour = 1
Normal Hours Worked per Month = 160
Practical Limit to Hours Worked = 360
Coverage Time = 1
Desired Time to Clear Workload = 1
Time to Adjust Hours Worked = 0.25
Time to Perceive = 0.25
Normal Depletion = 0.24

Normal Recovery = 0.8
Initial Workload Level = Initial Workload
Initial Hours Worked per Month = Normal Hours Worked Per Month
Initial Energy Level = 1

Organisational Justice Sector
Time for Others to Perceive = 1
Initial Salary = 2800
Initial Median Salary = 3500
Time to Adjust Organisational Injustice = 1
Initial Organisational Perception of Efficacy = 0
Initial Organisational Injustice Level = Indicated Organisational Injustice Level
Initial Perceived Productive Output = Productive Output
Initial Perceived Relative Utilisation = Relative Capacity Utilisation

Passion Burnout & Turnover Intention Sector
Time to Adjust Passion = 1
Time to Adjust Turnover Intention = 1
Initial Passion Level = 0.8
Initial Turnover Intention Level = 0.2

Salary Increase and Decent Colleagues Scenario

This scenario eliminates the injustice adjustment from Relative Salary, indicating that the non-profit worker is paid fairly as compared to the median salary of a graduate. Additionally, this scenario breaks the "Wrestling Lazy Colleagues" loop by keeping the Colleague's Productive Output constant at normal. In other words, the Colleague no longer reacts to the efficacy of the main non-profit worker and does not erode their productive output. This is a policy experiment.

All parameter and initial values are the same except for the following:
SWITCH Colleague's Output Erosion = 0
SWITCH Equilibrium Salary = 1

Controlled Overload Scenario

This scenario switches the Expected Capacity Utilisation to Controlled Overload Capacity Utilisation, wherein the maximum value of the table function is reduced from 2 to 1.4. It simulates what happens if the effect of the "Exploit the Capital" R2 loop is dampened – a policy simulation.

All parameter values are the same except for the following:
SWITCH Role Overload Policy = 1

Energy Saver Scenario

This scenario tests the effect of energy management policies – a policy simulation – such that when energy level depletes, the hours worked is adjusted downwards.

All parameter values are the same except for the following:
SWITCH Adjustment from Energy Policy = 1