**1 Data:**

Data của DSS là những câu hỏi để kiểm tra tác động của từng khía cạnh quản lý rủi ro.

Mỗi câu hỏi có hai hoặc nhiều câu trả lời và có cấu trúc theo template sau:

|  |  |
| --- | --- |
| Element | Explanation |
| ID | ID distinguishes different questions. |
| Aspects | Aspects identified which will be assessed using question. |
| Dimension | Possible Leavitt dimension where the aspect fall. |
| Question | Question describes what to elicit information. |
| Description | Short description about question. |
| Answers | Possible answer with description. |

Từ template này tác giả đã xây dựng được 53 câu hỏi ứng với 49 khía cạnh.

|  |  |  |  |
| --- | --- | --- | --- |
| **Number** | **Question** | **Aswer 1** | **Answer 2** |
| 1 | What can be the cultural difference between distributed sites? | Low socio-cultural difference among sites. | High socio-cultural difference among sites |
| 2 | What is the cultural background of organizations? | Different organization | Different organization |
| 3 | What is the trust level among employees at distributed sites? | Medium | Low |
| 4 | What is the degree of relationship between clients and vendors? | Close | Low |
| 5 | What are the employee’s skill levels at distributed sites? | Low | High |
| 6 | What is the level of interaction between internal and external elements? | High | High |
| 7 | Is your staff fully competent with you or organization? | Medium | Low |
| 8 | What is the experience of employees in your organization? | Medium | High |
| 9 | When higher authority and project managers meet about issues? | Upon special event | Regularly |
| 10 | What is the degree of team behavior within different sites? | High | Low |
| 11 | What is the team cognition level between dispersed teams? | Very high | Very high |
| 12 | How many customers are available during the software development process? | Low | medium |
| 13 | Is task divided into sub-tasks and allocated to sites in a proper manner? | disagree | disagree |
| 14 | What is the degree of domain knowledge of particular site? | Low | Low |
| 15 | The vendor you select is capable of developing a product? | Medium | Low |
| 16 | The contract between sites or parties is concise and clear? | Partially agree | disagree |
| 17 | Is integration of different components of tasks handled carefully? | Medium | Low |
| 18 | Is scope of project complete before the start of development? | Low | High |
| 19 | Is project developed by distributed sites completed under planned cost? | Agree | Partially agree |
| 20 | Does your organization have enough human resource to complete the project? | Medium | Low |
| 21 | How much distance between distributed sites? | High | High |
| 22 | What is the temporal distance between distributed sites? | High | Medium |
| 23 | How many sites can be involved in distributed development? | Agree | Partially agree |
| 24 | Is agile practices followed in different distributed sites? | Medium | Medium |
| 25 | What is the level of team structure across sites? | Medium | Low |
| 26 | What is the structure of the organization in distributed sites? | Different organization | Same organization |
| 27 | What are the social attributes of different team members with in the organizations? | Low | High |
| 28 | Is organization fully support cloud base architecture for different sites? | Not using cloud | Partially |
| 29 | What is the process maturity of different sites? | Medium | High |
| 30 | What is the degree of knowledge management in your organization or sites? | Medium | Low |
| 31 | Is complexity faced by the project across sites? | No | Yes |
| 32 | How much is awareness of task among different project managers required across sites? | High | High |
| 33 | What is the degree of productivity across sites in your organization? | Medium | Low |
| 34 | Is different process of the development documented properly within the organizations? | Agree | Disagree |
| 35 | Are distributed sites following proper development processes? | High | Medium |
| 36 | Your organization or site is producing a quality product? | Agree | Agree |
| 37 | Are distributed sites or is customer satisfied with project delivery and its performance? | Low | High |
| 38 | Are sites using component based software development methodology to build software? | Partially | Partially |
| 39 | Is the requirement complete from the start of the project? | Low | Medium |
| 40 | Is organization or site having following same coding standard during development? | Medium | High |
| 41 | Is organization properly designed and models the whole development process? | No | No |
| 42 | Is software architecture providing a good design for the system requirements? | Agree | Partially agree |
| 43 | What is the degree of software configuration management in an organization? | High | Medium |
| 44 | Is software development life cycle followed in an organization? | High | Low |
| 45 | What is the level of personal communication across sites? | Medium | High |
| 46 | Is the interaction medium reliable for different sites? | Low | Medium |
| 47 | Is the coordination mechanism appropriate across sites? | Medium | Medium |
| 48 | Is internet medium reliable across distributed environment? | Disagree | Agree |
| 49 | Are people in organization or sites familiar with the technology used by them? | Medium | Low |
| 50 | Is the technology used across sites compatible with distributed sites? | High | Medium |
| 51 | Is infrastructure provided by the organizations or sites appropriate? | Low | Medium |
| 52 | What is the degree of security provided by the organization? | Medium | High |
| 53 | Are the tools compatible with different distributed sites? | High | Low |

**2 Information và Structred Information**

Sau khi trả lời các câu hỏi trên, DSS sẽ dựa vào các bộ luật để lập thành ma trận AHP để biểu diễn việc so sánh các khía cạnh từng đôi một. Ví dụ:

Chọn 3 khía cạnh Culuture among sites, Trust và Personal attributes. Có các mức đánh giá 1: Bằng nhau, 2: Quan trọng hơn.Ta có ma trận AHP 3x3:

|  |  |  |  |
| --- | --- | --- | --- |
|  | CAS | T | PA |
| CAS | 1 | 1/2 | 2 |
| T | 2 | 1 | 2 |
| PA | 1/2 | 1/2 | 1 |

**3 Insight**

Từ ma trận AHP, ta tính được độ ưu tiên cho từng khía cạnh:

|  |  |  |  |
| --- | --- | --- | --- |
|  | CAS | T | PA |
| CAS | 2/7 | 1/4 | 2/5 |
| T | 4/7 | 1/2 | 2/5 |
| PA | 1/7 | 1/4 | 1/5 |

Vậy độ ưu tiên của CAS là (2/7 + 1/4 + 2/5)/3 = 0.312

Độ ưu tiên của Trust là (4/7 + 1/2 + 2/5)/3 = 0.49

Độ ưu tiên của PA là (1/7 + 1/4 + 1/5)/3= 0.198

|  |  |  |  |
| --- | --- | --- | --- |
| Category |  | Priority | Rank |
| 1 | Culture among sites | 31.2% | 2 |
| 2 | Trust | 49% | 1 |
| 3 | Personal attributes | 19.8% | 3 |

**4 Độ tin cậy của bộ dữ liệu:**

Sau khi đã có bộ mẫu từ câu trả lời của các câu hỏi,thực hiện phương pháp AHP để tìm độ tin cậy tương ứng.

Đối với khía cạnh Actors,có các tiêu chí Culuture among sites, Trust, Relationship between offshore and vendo ,Personal attributes, Internal-External interaction, Staff size, Experience developer, Meeting practices, Team behavior, Team cognition, Motivation, Customer availability, Task allocation, Domain knowledge, Vendor selection, Project management.Ta có bảng so sánh các cặp tiêu chí:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | CA | TR | RO | PA | IE | SE | ED | MP | TB | TC | MT | CS | TA | DK | VS | PM |
| CA | 1 | 1/2 | 2 | 1 | 3 | 1/2 | 4 | 1 | 5 | 2 | 1/3 | 1 | 4 | 1/3 | 1/2 | 1 |
| TR | 2 | 1 | 2 | 1/2 | 1 | 1/3 | 1/2 | 2 | 4 | 2 | 1 | 1 | 3 | 1/4 | 1/2 | 2 |
| RO | ½ | 1/2 | 1 | 3 | 1/2 | 2 | 1 | 1/3 | 2 | 3 | 1 | 5 | 1/3 | 2 | 2 | 4 |
| PA | 1 | 2 | 1/3 | 1 | 2 | 1 | 4 | 2 | 1/2 | 1/5 | 2 | 1/3 | 1 | 1/3 | 2 | 2 |
| IE | 1/3 | 1 | 2 | 1/2 | 1 | 1/4 | 2 | 2 | 1 | 1/3 | 1 | 1 | 2 | 3 | 1/4 | 1 |
| SE | 2 | 3 | 1/2 | 1 | 4 | 1 | 3 | 2 | 1 | 1/3 | 1/2 | 1 | 1/4 | 2 | 1/3 | 1/2 |
| ED | 1/4 | 2 | 1 | 1/4 | 1/2 | 1/3 | 1 | 4 | 2 | 1 | 1 | 1/4 | 2 | 1/3 | 1/2 | 1 |
| MP | 1 | 1/2 | 3 | 1/2 | 1/2 | 1/2 | 1/4 | 1 | 1/2 | 1/3 | 1 | 2 | 1/3 | 1 | 2 | 1/4 |
| TB | 1/5 | 1/4 | 1/2 | 2 | 1 | 1 | 1/2 | 2 | 1 | 3 | 1 | 2 | 1/4 | 1 | 3 | 2 |
| TC | 1/2 | 1/2 | 1/3 | 5 | 3 | 3 | 1 | 3 | 1/3 | 1 | 4 | 1/2 | 1 | 2 | 1/3 | 4 |
| MT | 3 | 1 | 1 | 1/2 | 1 | 2 | 1 | 1 | 1 | 1/4 | 1 | 2 | 3 | 1/4 | 1/2 | 1/3 |
| CS | 1 | 1 | 1/5 | 3 | 1 | 1 | 4 | 1/2 | 1/2 | 2 | 1/2 | 1 | 2 | 1/3 | 4 | 1 |
| TA | 1/4 | 1/3 | 3 | 1 | 1/2 | 4 | 1/2 | 3 | 4 | 1 | 1/3 | 1/2 | 1 | 3 | 2 | 1 |
| DK | 3 | 4 | 1/2 | 3 | 1/3 | 1/2 | 3 | 1 | 1 | 1/2 | 4 | 3 | 1/3 | 1 | 4 | 5 |
| VS | 2 | 2 | 1/2 | 1/2 | 4 | 3 | 2 | 1/2 | 1/3 | 3 | 2 | 1/4 | 1/2 | 1/4 | 1 | 2 |
| PM | 1 | 1/2 | 1/4 | 1/2 | 1 | 2 | 1 | 4 | 1/2 | 1/4 | 3 | 1 | 1 | 1/5 | 1/2 | 1 |

Đánh giá mức độ ưu tiên:

|  |  |
| --- | --- |
| **Mức độ ưu tiên** | **Giá trị số** |
| Ưu tiên bằng nhau | 1 |
| Ưu tiên bằng nhau đến vừa phải | 2 |
| Ưu tiên vừa phải | 3 |
| Ưu tiên vừa phải đến hơi ưu tiên | 4 |
| Hơi ưu tiên | 5 |
| Rất ưu tiên | 6 |

Trọng số các tiêu chí khi so sánh cặp:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | CA | TR | RO | PA | IE | SE | ED | MP | TB | TC | MT | CS | TA | DK | VS | PM |
| CA | 6/241 | 60/551 | 4/93 | 9/73 | 6/269 | 16/115 | 3/88 | 15/74 | 10/101 | 1/71 | 6/131 | 2/11 | 7/363 | 6/281 | 12/337 | 6/241 |
| TR | 12/241 | 60/551 | 2/93 | 3/73 | 4/269 | 2/115 | 3/44 | 6/37 | 10/101 | 3/71 | 6/131 | 3/22 | 7/484 | 6/281 | 24/337 | 12/241 |
| RO | 6/241 | 30/551 | 4/31 | 3/146 | 24/269 | 4/115 | 1/88 | 3/37 | 15/101 | 3/71 | 30/131 | 1/66 | 67/579 | 24/281 | 48/337 | 6/241 |
| PA | 24/241 | 10/551 | 4/93 | 6/73 | 12/269 | 16/115 | 3/44 | 3/148 | 1/101 | 6/71 | 2/131 | 1/22 | 7/363 | 24/281 | 24/337 | 24/241 |
| IE | 12/241 | 60/551 | 2/93 | 3/73 | 3/269 | 8/115 | 3/44 | 3/74 | 5/303 | 3/71 | 6/131 | 1/11 | 67/386 | 3/281 | 12/337 | 12/241 |
| SE | 36/241 | 15/551 | 4/93 | 12/73 | 12/269 | 12/115 | 3/44 | 3/74 | 5/303 | 3/142 | 6/131 | 1/88 | 67/579 | 4/281 | 6/337 | 36/241 |
| ED | 24/241 | 30/551 | 1/93 | 3/146 | 4/269 | 4/115 | 3/22 | 3/37 | 5/101 | 3/71 | 3/262 | 1/11 | 7/363 | 6/281 | 12/337 | 24/241 |
| MP | 6/241 | 90/551 | 2/93 | 3/146 | 6/269 | 1/115 | 3/88 | 3/148 | 5/303 | 3/71 | 12/131 | 1/66 | 7/121 | 24/281 | 3/337 | 6/241 |
| TB | 3/241 | 15/551 | 8/93 | 3/73 | 12/269 | 2/115 | 3/44 | 3/74 | 15/101 | 3/71 | 12/131 | 1/88 | 7/121 | 36/281 | 24/337 | 3/241 |
| TC | 6/241 | 10/551 | 20/93 | 9/73 | 36/269 | 4/115 | 9/88 | 1/74 | 5/101 | 12/71 | 3/131 | 1/22 | 67/579 | 4/281 | 48/337 | 6/241 |
| MT | 12/241 | 30/551 | 2/93 | 3/73 | 24/269 | 4/115 | 3/88 | 3/74 | 5/404 | 3/71 | 12/131 | 3/22 | 7/484 | 6/281 | 4/337 | 12/241 |
| CS | 12/241 | 6/551 | 4/31 | 3/73 | 12/269 | 16/115 | 3/176 | 3/148 | 10/101 | 3/142 | 6/131 | 1/11 | 7/363 | 48/281 | 12/337 | 12/241 |
| TA | 4/241 | 90/551 | 4/93 | 3/146 | 48/269 | 2/115 | 9/88 | 6/37 | 5/101 | 1/71 | 3/131 | 1/22 | 67/386 | 24/281 | 12/337 | 4/241 |
| DK | 48/241 | 15/551 | 4/31 | 1/73 | 6/269 | 12/115 | 3/88 | 3/74 | 5/202 | 12/71 | 18/131 | 1/66 | 7/121 | 48/281 | 60/337 | 48/241 |
| VS | 24/241 | 15/551 | 2/93 | 12/73 | 36/269 | 8/115 | 3/176 | 1/74 | 15/101 | 6/71 | 3/262 | 1/44 | 7/484 | 12/281 | 24/337 | 24/241 |
| PM | 6/241 | 15/551 | 2/93 | 3/73 | 24/269 | 4/115 | 3/22 | 3/148 | 5/404 | 9/71 | 6/131 | 1/22 | 7/605 | 6/281 | 12/337 | 6/241 |

|  |  |  |
| --- | --- | --- |
|  | Trọng số tiêu chí(Tổng các hàng/16) | Tổng cột |
| CA | 10/137 | 19.0333 |
| TR | 59/926 | 20.083 |
| RO | 5/64 | 28.336 |
| PA | 56/997 | 23.25 |
| IE | 30/569 | 24.333 |
| SE | 52/841 | 22.41667 |
| ED | 27/587 | 28.75 |
| MP | 3/70 | 29.33 |
| TB | 5/89 | 24.667 |
| TC | 75/959 | 20.2 |
| MT | 4/75 | 23.667 |
| CS | 52/843 | 21.833 |
| TA | 1/14 | 22 |
| DK | 66/713 | 17.2833 |
| VS | 18/275 | 23.416 |
| PM | 33/707 | 28.08 |

Lamda=Trọng số chi tiêu \* tổng cột =22

Ta có CI= Nếu CI < 1.59 sẽ đạt yêu cầu.

Độ tin cậy đối với khía cạnh Actors CI= < 0.4

CR==0.25>0.09 vậy mẫu dữ liệu có thể không đáng tin

Tương tự với khía cạnh Structure,Task,Technology.

Chú thích:

phương pháp AHP: Phương pháp phân tích thứ bậc (AHP) là một phương pháp phân tích định lượng thường sử dụng để so sánh lựa chọn phương án. Thay vì yêu cầu một khối lượng dữ liệu lớn, nó sử dụng ý kiến chuyên gia và không cần quá nhiều dữ liệu bằng số.