Lampiran 1: Contoh Kuesioner Bagian 1

KUESIONER

KRITERIA KEPUTUSAN KONTRAKTOR DALAM MENGIMPLEMENTASIKAN *BUILDING INFORMATION MODELING*

Dengan hormat,

Kami Jeremy Philson (B11200047) dan Charlos Kuanda (B11200087) mahasiswa Program Studi Teknik Sipil Universitas Kristen Petra sedang menjalankan Tugas Akhir mengenai "**Kriteria Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling***" dalam bimbingan Andi, S.T., M.Eng., Ph.D. Pada saat ini kami sedang melakukan studi mengenai pembobotan kriteria dan kecenderungan kontraktor di Surabaya dalam mengimplementasikan *Building Information Modeling*.

Building Information Modeling (BIM) adalah teknologi pemodelan digital untuk menghasilkan, mengkomunikasikan, dan menganalisis model bangunan. Contoh dari aplikasi atau *software* BIM yang sering digunakan adalah *Autodesk Revit 3D*. Kriteria keputusan kontraktor bertujuan untuk membantu pihak kontraktor dalam memutuskan penggunaan BIM. Untuk mencapai tujuan tersebut, dengan hormat kami memohon kesediaan Bapak/Ibu untuk meluangkan waktu mengisi kuesioner ini berdasarkan pengalaman dan pendapat pribadi Bapak/Ibu. Semua data yang Bapak/Ibu berikan akan kami jamin kerahasiaannya dan digunakan hanya untuk kepentingan akademis. Kuesioner ini terdiri dari 3 bagian, yaitu:

A. Data diri responden
B. Perbandingan (*Pairwise comparison*) antar kriteria dan antar sub-kriteria
C. Perbandingan (*Pairwise comparison*) alternatif terhadap sub-kriteria

Contact Person

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Bagian 1: Data Diri Responden

1. Nama responden : _____

2. Jabatan / posisi responden : _____

3. Lama pengalaman bekerja : _____ tahun

4. Nama perusahaan : _____

5. Keputusan terhadap *Building Information Modeling* (BIM): *(mohon pilih salah satu opsi dan berikan tanda ✓pada kotak yang tersedia)*

□ Sudah menggunakan BIM

□ Tertarik dan berencana menggunakan BIM

□ Tertarik, namun belum ada rencana untuk menggunakan BIM

□ Belum menggunakan BIM dan belum tertarik/berencana menggunakan BIM

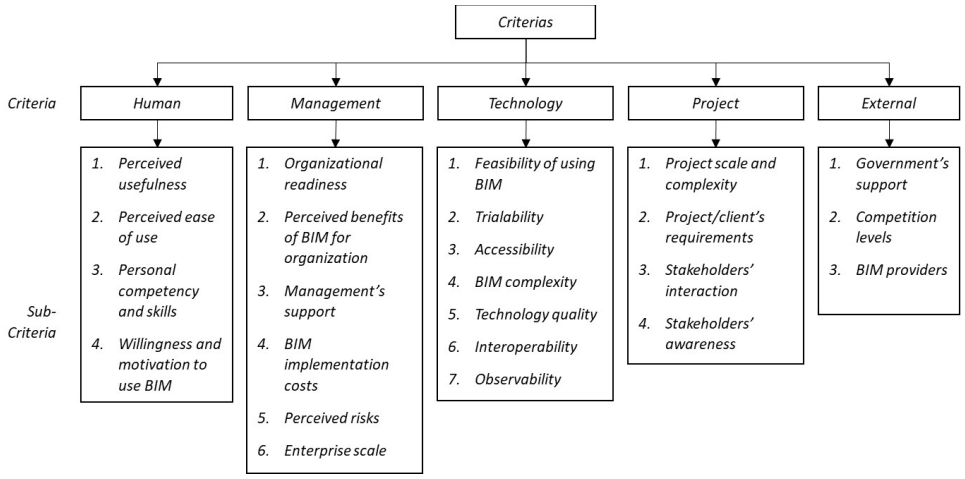
□ Tidak tertarik menggunakan BIM

Lampiran 2: Contoh Kuesioner Bagian 2

Bagian 2: Perbandingan (*Pairwise comparison*) Antar Kriteria dan Antar Sub-Kriteria

Berikut merupakan Struktur Hierarki Kriteria dan Sub-Kriteria dalam Kriteria Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling*. Struktur hierarki dan hasil dari kuesioner ini akan kami gunakan sebagai dasar untuk memutuskan implementasi BIM atau tidak. Dalam kuesioner ini terdapat lima kriteria dan 24 sub-kriteria yang tersebar di dalamnya. Akan ada perbandingan antara setiap kriteria dan sub-kriteria yang terkandung dalam kriteria-kriteria tersebut.

Struktur Hierarki Kriteria dan Sub-Kriteria



Gambar 1. Struktur Hierarki

Bapak/Ibu diharapkan dapat membaca dan memahami terlebih dahulu pengertian dari setiap kriteria dan sub-kriteria yang tertera di bawah. Bila ada yang dirasa membingungkan, maka Bapak/Ibu dapat menanyakan terlebih dahulu kepada kami.

Keterangan

1. *Human*/Manusia: kriteria-kriteria yang berhubungan dengan individu di dalam perusahaan
   a. *Perceived usefulness* = keyakinan bahwa BIM dapat berguna dan meningkatkan kinerja individu
   b. *Perceived ease of use* = keyakinan bahwa BIM dapat digunakan dengan mudah dan tanpa usaha lebih
   c. *Personal competency and skills* = pengalaman, kemampuan, dan kompetensi pribadi dari individu dalam menggunakan BIM
   d. *Willingness and motivation to use BIM* = keinginan dan motivasi pribadi untuk menggunakan BIM
2. *Management*/Manajemen: kriteria-kriteria yang berhubungan dengan kepentingan manajemen perusahaan
   a. *Organizational readiness* = kesiapan organisasi dalam menggunakan BIM, meliputi infrastruktur yang ada (internet, jaringan listrik yang stabil, dsb.), ketersediaan tenaga ahli BIM, dan kemampuan organisasi dalam memanfaatkan teknologi informasi

b. *Perceived benefits of BIM for organization* = keyakinan bahwa penggunaan BIM dapat memberikan keuntungan bagi organisasi, seperti naiknya nilai jual organisasi di mata klien, penghematan biaya proyek, mengurangi waktu pengerjaan proyek, dsb.
c. *Management's support* = dukungan dari manajemen dalam implementasi BIM dengan berbagai bentuk seperti kebijakan, alokasi sumber daya, dsb.
d. *BIM implementation costs* = biaya dalam mengimplementasikan BIM, meliputi biaya investasi awal (infrastruktur tambahan, pembelian *software* BIM, mendatangkan tenaga ahli, dsb.), biaya tahunan (memperpanjang lisensi, perawatan infrastruktur, pelatihan SDM, dsb.), dan biaya-biaya tambahan lainnya
e. *Perceived risks* = risiko yang diyakini dapat terjadi dalam implementasi BIM, seperti kegagalan di tengah berjalannya proyek, kondisi SDM yang tidak menentu, biaya tambahan yang tidak diperkirakan, dsb.
f. *Enterprise scale* = skala perusahaan, dimana semakin besar skala perusahaan maka seringkali implementasi BIM akan semakin sulit

3. *Technology*/Teknologi: kriteria-kriteria yang berhubungan dengan teknologi dari BIM
   a. *Feasibility of using BIM* = kelayakan atau kecocokan penggunaan teknologi BIM dalam berbagai jenis proyek
   b. *Trialability* = kemampuan untuk menguji coba BIM
   c. *Accessibility* = aksesibilitas informasi dalam *software* BIM bagi berbagai pihak yang terkait
   d. *BIM complexity* = kompleksitas atau kerumitan dari *software* BIM yang mempengaruhi waktu adaptasi terhadap BIM
   e. *Technology quality* = kualitas dari teknologi BIM seperti kemampuan demonstrasi visualisasi hasil, fungsi-fungsi dari *software* yang diperlukan, kecepatan *software* dalam mengerjakan tugas, dsb.
   f. *Interoperability* = kemampuan *software-software* BIM yang berbeda dalam bertukar dan mengerjakan informasi yang sama tanpa adanya kehilangan informasi
   g. *Observability* = kemampuan BIM untuk dipantau dan dinilai dengan mudah dan jelas berdasarkan hasil dari implementasi BIM
4. *Project*/Proyek: kriteria-kriteria yang berhubungan dengan kondisi proyek
   a. *Project scale and complexity* = skala dan kompleksitas atau kerumitan proyek
   b. *Project/client's requirements* = persyaratan dari proyek atau klien mengenai proyek
   c. *Stakeholders' interaction* = interaksi antar pemangku kepentingan/*stakeholder* dalam proyek (tingkat kelancaran komunikasi, kepercayaan, dsb.)
   d. *Stakeholders' awareness* = kesadaran pemangku kepentingan/*stakeholder* dalam implementasi BIM
5. *External*/Eksternal: kriteria-kriteria yang merupakan pengaruh eksternal perusahaan
   a. *Government's support* = dukungan pemerintah dalam penggunaan BIM dalam berbagai bentuk seperti peraturan, kebijakan, pelatihan atau seminar dari dinas terkait, dsb.
   b. Competition level = tingkat kompetisi antar perusahaan konstruksi dalam menggunakan BIM
   c. BIM providers = adanya penyedia jasa BIM yang terjangkau dan dapat memberikan bantuan serta pelatihan

PETUNJUK PENGISIAN KUESIONER

Dalam bagian ini, Bapak/Ibu diminta untuk membandingkan antara dua kriteria atau sub-kriteria dalam kriteria yang sama dan memberikan penilaian dengan tanda silang [X] pada kotak nilai yang Bapak/Ibu anggap sesuai sebagai nilai berdasarkan skala berikut:

Tabel 1. Skala Perbandingan

Nilai	Keterangan
1	Kedua kriteria/sub-kriteria sama pentingnya
3	Kriteria/Sub-Kriteria pilihan sedikit lebih penting
5	Kriteria/Sub-Kriteria pilihan lebih penting
7	Kriteria/Sub-Kriteria pilihan sangat lebih penting
9	Kriteria/Sub-Kriteria pilihan mutlak lebih penting
2, 4, 6, 8	Nilai di antara dua pertimbangan yang berdekatan

CONTOH

Kriteria manakah yang lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan kriteria-kriteria berikut?				**Tingkat Perbandingan**								
Human	⊗	○	***Management***	**1**	**2**	**3**	**4**	⊗ **5**	**6**	**7**	**8**	**9**
Management	⊗	○	***Technology***	**1**	**2**	**3**	**4**	**5**	**6**	⊗ **7**	**8**	**9**
Technology	⊗	○	***Project***	**1**	**2**	⊗ **3**	**4**	**5**	**6**	**7**	**8**	**9**
Project	○	⊗	***External***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	⊗ **9**

Artinya:

1. ***Human*** lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan ***Management***
2. ***Management*** sangat lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan ***Technology***
3. ***Technology*** sedikit lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan ***Project***
4. ***External*** mutlak lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan ***Project***

Kuesioner Kriteria Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling*

Kriteria manakah yang lebih penting bagi kontraktor dalam menentukan implementasi BIM dibandingkan kriteria-kriteria berikut?				**Tingkat Perbandingan**								
Human	○	○	***Management***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Human	○	○	***Technology***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Human	○	○	***Project***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Human	○	○	***External***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management	○	○	***Technology***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management	○	○	***Project***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management	○	○	***External***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology	○	○	***Project***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology	○	○	***External***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project	○	○	***External***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Kuesioner Sub-Kriteria Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling*

Kriteria *Human*/Manusia

Dalam kriteria *Human*/Manusia, sub-kriteria manakah yang lebih penting dibandingkan sub-kriteria berikut?				**Tingkat Perbandingan**								
Perceived usefulness	○	○	***Perceived ease of use***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived usefulness	○	○	***Personal competency and skills***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived usefulness	○	○	***Willingness and motivation to use BIM***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived ease of use	○	○	***Personal competency and skills***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived ease of use	○	○	***Willingness and motivation to use BIM***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Personal competency and skills	○	○	***Willingness and motivation to use BIM***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Kriteria *Management*/Manajemen

Dalam kriteria *Management*/Manajemen, sub-kriteria manakah yang lebih penting dibandingkan sub-kriteria berikut?				**Tingkat Perbandingan**								
Organizational readiness	○	○	***Perceived benefits of BIM for organization***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Organizational readiness	○	○	***Management's support***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Organizational readiness	○	○	***BIM implementation costs***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Organizational readiness	○	○	***Perceived risks***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Organizational readiness	○	○	***Enterprise scale***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived benefits of BIM for organization	○	○	***Management's support***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived benefits of BIM for organization	○	○	***BIM implementation costs***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived benefits of BIM for organization	○	○	***Perceived risks***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived benefits of BIM for organization	○	○	***Enterprise scale***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management's support	○	○	***BIM implementation costs***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management's support	○	○	***Perceived risks***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management's support	○	○	***Enterprise scale***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM implementation costs	○	○	***Perceived risks***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM implementation costs	○	○	***Enterprise scale***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived risks	○	○	***Enterprise scale***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Kriteria *Technology*/Teknologi

Dalam kriteria *Technology*/Teknologi, sub-kriteria manakah yang lebih penting dibandingkan sub-kriteria berikut?				**Tingkat Perbandingan**								
Feasibility of using BIM	○	○	***Trialability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM	○	○	***Accessibility***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM	○	○	***BIM complexity***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM	○	○	***Technology quality***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM	○	○	***Interoperability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability	○	○	***Accessibility***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability	○	○	***BIM complexity***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability	○	○	***Technology quality***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability	○	○	***Interoperability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accessibility	○	○	***BIM complexity***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accessibility	○	○	***Technology quality***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accessibility	○	○	***Interoperability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accessibility	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM complexity	○	○	***Technology quality***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM complexity	○	○	***Interoperability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM complexity	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology quality	○	○	***Interoperability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology quality	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Interoperability	○	○	***Observability***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Kriteria *Project*/Proyek

Dalam kriteria *Project*/Proyek, sub-kriteria manakah yang lebih penting dibandingkan sub-kriteria berikut?				**Tingkat Perbandingan**								
Project scale and complexity	○	○	***Project/client's requirements***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project scale and complexity	○	○	***Stakeholder's interaction***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project scale and complexity	○	○	***Stakeholders' awareness***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project/client's requirements	○	○	***Stakeholder's interaction***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project/client's requirements	○	○	***Stakeholders' awareness***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Stakeholder's interaction	○	○	***Stakeholders' awareness***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Kriteria *External*/Eksternal

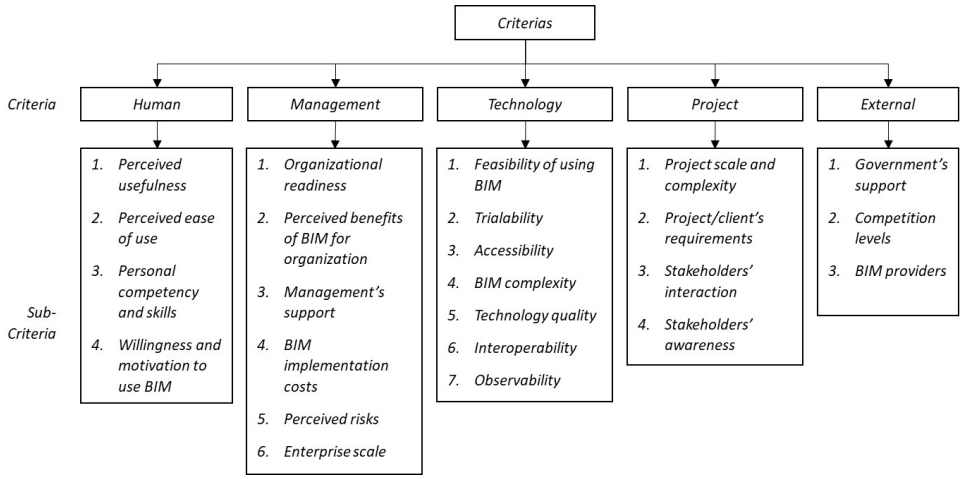
Dalam kriteria *External*/Eksternal, sub-kriteria manakah yang lebih penting dibandingkan sub-kriteria berikut?				**Tingkat Perbandingan**								
Government's support	○	○	***Competition levels***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Government's support	○	○	***BIM providers***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Competition levels	○	○	***BIM providers***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Lampiran 3: Contoh Kuesioner Bagian 3

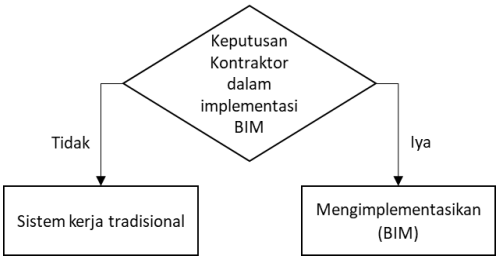
Bagian 3: Perbandingan (*Pairwise comparison*) Alternatif Terhadap Sub-Kriteria

Berikut merupakan Struktur Hierarki Kriteria dan Sub-Kriteria dan Bagan Altenatif Sistem Kerja dalam Kriteria Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling*. Hasil dari kuesioner ini akan kami gunakan sebagai dasar untuk memutuskan implementasi BIM atau tidak. Dalam kuesioner ini terdapat 2 alternatif system kerja dan 24 sub-kriteria yang terbagi dalam 5 kriteria. Akan ada perbandingan antara kedua alternatif yang dibandingkan terhadap sub-kriteria.

Struktur Hierarki Kriteria dan Sub-Kriteria



Gambar 1. Struktur Hierarki



Gambar 2. Bagan Alternatif Sistem Kerja

Bapak/Ibu diharapkan dapat membaca dan memahami terlebih dahulu pengertian dari setiap kriteria dan sub-kriteria yang tertera di bawah. Bila ada yang dirasa membingungkan, maka Bapak/Ibu dapat menanyakan terlebih dahulu kepada kami.

Keterangan

1. *Human*/Manusia: kriteria-kriteria yang berhubungan dengan individu di dalam perusahaan
   a. *Perceived usefulness* = keyakinan bahwa BIM dapat berguna dan meningkatkan kinerja individu
   b. *Perceived ease of use* = keyakinan bahwa BIM dapat digunakan dengan mudah dan tanpa usaha lebih
   c. *Personal competency and skills* = pengalaman, kemampuan, dan kompetensi pribadi dari individu dalam menggunakan BIM
   d. *Willingness and motivation to use BIM* = keinginan dan motivasi pribadi untuk menggunakan BIM

2. *Management*/Manajemen: kriteria-kriteria yang berhubungan dengan kepentingan manajemen perusahaan
   a. *Organizational readiness* = kesiapan organisasi dalam menggunakan BIM, meliputi infrastruktur yang ada (internet, jaringan listrik yang stabil, dsb.), ketersediaan tenaga ahli BIM, dan kemampuan organisasi dalam memanfaatkan teknologi informasi
   b. *Perceived benefits of BIM for organization* = keyakinan bahwa penggunaan BIM dapat memberikan keuntungan bagi organisasi, seperti naiknya nilai jual organisasi di mata klien, penghematan biaya proyek, mengurangi waktu pengerjaan proyek, dsb.
   c. *Management's support* = dukungan dari manajemen dalam implementasi BIM dengan berbagai bentuk seperti kebijakan, alokasi sumber daya, dsb.
   d. *BIM implementation costs* = biaya dalam mengimplementasikan BIM, meliputi biaya investasi awal (infrastruktur tambahan, pembelian *software* BIM, mendatangkan tenaga ahli, dsb.), biaya tahunan (memperpanjang lisensi, perawatan infrastruktur, pelatihan SDM, dsb.), dan biaya-biaya tambahan lainnya
   e. *Perceived risks* = resiko yang diyakini dapat terjadi dalam implementasi BIM, seperti kegagalan di tengah berjalannya proyek, kondisi SDM yang tidak menentu, biaya tambahan yang tidak diperkirakan, dsb.
   f. *Enterprise scale* = skala perusahaan, dimana semakin besar skala perusahaan maka seringkali implementasi BIM akan semakin sulit
3. *Technology*/Teknologi: kriteria-kriteria yang berhubungan dengan teknologi dari BIM
   a. *Feasibility of using BIM* = kelayakan atau kecocokan penggunaan teknologi BIM dalam berbagai jenis proyek
   b. *Trialability* = kemampuan untuk menguji coba BIM
   c. *Accessibility* = aksesibilitas informasi dalam *software* BIM bagi berbagai pihak yang terkait
   d. *BIM complexity* = kompleksitas atau kerumitan dari *software* BIM yang mempengaruhi waktu adaptasi terhadap BIM
   e. *Technology quality* = kualitas dari teknologi BIM seperti kemampuan demonstrasi visualisasi hasil, fungsi-fungsi dari *software* yang diperlukan, kecepatan *software* dalam mengerjakan tugas, dsb.
   f. *Interoperability* = kemampuan *software-software* BIM yang berbeda dalam bertukar dan mengerjakan informasi yang sama tanpa adanya kehilangan informasi
   g. *Observability* = kemampuan BIM untuk dipantau dan dinilai dengan mudah dan jelas berdasarkan hasil dari implementasi BIM
4. *Project*/Proyek: kriteria-kriteria yang berhubungan dengan kondisi proyek
   a. *Project scale and complexity* = skala dan kompleksitas atau kerumitan proyek
   b. *Project/client's requirements* = persyaratan dari proyek atau klien mengenai proyek
   c. *Stakeholders' interaction* = interaksi antar pemangku kepentingan/*stakeholder* dalam proyek (tingkat kelancaran komunikasi, kepercayaan, dsb.)
   d. *Stakeholders' awareness* = kesadaran pemangku kepentingan/*stakeholder* dalam implementasi BIM
5. *External*/Eksternal: kriteria-kriteria yang merupakan pengaruh eksternal perusahaan
   a. *Government's support* = dukungan pemerintah dalam penggunaan BIM dalam berbagai bentuk seperti peraturan, kebijakan, pelatihan atau seminar dari dinas terkait, dsb.

b. *Competition level* = tingkat kompetisi antar perusahaan konstruksi dalam menggunakan BIM
c. *BIM providers* = adanya penyedia jasa BIM yang terjangkau dan dapat memberikan bantuan serta pelatihan

PETUNJUK PENGISIAN KUESIONER

Dalam bagian ini, Bapak/Ibu diminta untuk membandingkan antara dua alternatif yang dibandingkan terhadap sebuah sub-kriteria dan memberikan penilaian dengan tanda silang [X] pada kotak nilai yang Bapak/Ibu anggap sesuai sebagai nilai berdasarkan skala berikut:

Tabel 1. Skala Perbandingan

Nilai	Keterangan
1	Kedua kriteria/sub-kriteria sama baiknya
3	Kriteria/Sub-Kriteria pilihan sedikit lebih baik
5	Kriteria/Sub-Kriteria pilihan lebih baik
7	Kriteria/Sub-Kriteria pilihan sangat lebih baik
9	Kriteria/Sub-Kriteria pilihan mutlak lebih baik
2, 4, 6, 8	Nilai di antara dua pertimbangan yang berdekatan

CONTOH

Berdasarkan sub-kriteria berikut, alternatif manakah yang lebih baik bagi kontraktor?				**Tingkat Perbandingan**								
Perceived usefulness												
Tradisional	○	⊗	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived ease of use												
Tradisional	⊗	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Artinya:

1. Berdasarkan sub-kriteria "***Perceived usefulness***", alternatif "**Mengimplementasikan BIM**" lebih baik dibandingkan dengan alternatif "**Tradisional**".
2. Berdasarkan sub-kriteria "***Perceived ease of use***", alternatif "**Tradisional**" sedikit lebih baik dibandingkan dengan alternatif "**Mengimplementasikan BIM**".

Kuesioner Alternatif Keputusan Kontraktor dalam Mengimplementasikan *Building Information Modeling*

Berdasarkan sub-kriteria berikut, alternatif manakah yang lebih baik bagi kontraktor?				**Tingkat Perbandingan**								
Perceived usefulness												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived ease of use												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Personal competency and skills												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Willingness and motivation to use BIM												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Organizational readiness												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived benefits of BIM for organization												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Management's support												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM implementation costs												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Perceived risks												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Enterprise scale												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Feasibility of using BIM												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Trialability												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accessibility												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM complexity												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology quality												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Berdasarkan sub-kriteria berikut, alternatif manakah yang lebih baik bagi kontraktor?				Tingkat Perbandingan								
Interoperability												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Observability												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project scale and complexity												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project/client's requirements												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Stakeholders' interaction												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Stakeholders' awareness												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Government's support												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Competition levels												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
BIM providers												
Tradisional	○	○	**Mengimplementasikan BIM**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Lampiran 4: Matriks *Pairwise Comparison* Antar Kriteria

Kriteria		*Human*	*Management*	*Technology*	*Project*	*External*
Human	1	1,000	0,200	0,333	3,000	3,000
	2	1,000	0,333	0,333	3,000	3,000
	3	1,000	0,333	0,200	0,200	3,000
	4	1,000	1,000	0,333	0,333	1,000
	5	1,000	6,000	7,000	0,125	6,000
	6	1,000	1,000	0,200	0,200	0,200
	7	1,000	0,500	3,000	0,200	3,000
	8	1,000	7,000	0,111	8,000	0,200
	9	1,000	5,000	0,333	0,143	5,000
	10	1,000	7,000	0,111	0,111	5,000
	11	1,000	0,200	0,143	0,200	0,143
	12	1,000	5,000	0,167	5,000	6,000
	13	1,000	1,000	0,200	0,200	5,000
	14	1,000	5,000	0,167	7,000	0,200
	15	1,000	3,000	2,000	7,000	5,000
	16	1,000	5,000	0,167	7,000	0,200
	17	1,000	5,000	0,167	7,000	0,200
	18	1,000	5,000	0,167	7,000	0,200
Management	1	5,000	1,000	3,000	5,000	5,000
	2	3,000	1,000	1,000	3,000	5,000
	3	3,000	1,000	2,000	1,000	3,000
	4	1,000	1,000	0,333	1,000	4,000
	5	0,167	1,000	0,125	0,125	5,000
	6	1,000	1,000	1,000	0,500	0,333
	7	2,000	1,000	1,000	1,000	5,000
	8	0,143	1,000	0,200	8,000	8,000
	9	0,200	1,000	0,333	0,143	2,000
	10	0,143	1,000	5,000	1,000	0,333
	11	5,000	1,000	7,000	0,143	5,000
	12	0,200	1,000	0,200	7,000	7,000
	13	1,000	1,000	0,333	0,333	5,000
	14	0,200	1,000	0,167	7,000	7,000
	15	0,333	1,000	0,333	7,000	7,000
	16	0,200	1,000	0,167	7,000	7,000
	17	0,200	1,000	0,167	7,000	7,000
	18	0,200	1,000	0,167	7,000	7,000
Technology	1	3,000	0,333	1,000	3,000	3,000
	2	3,000	1,000	1,000	3,000	3,000
	3	5,000	0,500	1,000	2,000	5,000
	4	3,000	3,000	1,000	1,000	3,000
	5	0,143	8,000	1,000	0,125	8,000
	6	5,000	1,000	1,000	0,200	0,200
	7	0,333	1,000	1,000	0,200	3,000
	8	9,000	5,000	1,000	5,000	5,000
	9	3,000	3,000	1,000	0,333	7,000
	10	9,000	0,200	1,000	0,200	0,333
	11	7,000	0,143	1,000	0,200	5,000
	12	6,000	5,000	1,000	6,000	7,000
	13	5,000	3,000	1,000	2,000	5,000
	14	6,000	6,000	1,000	7,000	7,000

Lampiran 4: Matriks *Pairwise Comparison* Antar Kriteria (Lanjutan)

Kriteria		*Human*	*Management*	*Technology*	*Project*	*External*
Technology	15	0,500	3,000	1,000	7,000	7,000
	16	6,000	6,000	1,000	7,000	7,000
	17	6,000	6,000	1,000	7,000	7,000
	18	6,000	6,000	1,000	7,000	7,000
Project	1	0,333	0,200	0,333	1,000	1,000
	2	0,333	0,333	0,333	1,000	1,000
	3	5,000	1,000	0,500	1,000	5,000
	4	3,000	1,000	1,000	1,000	3,000
	5	8,000	8,000	8,000	1,000	8,000
	6	5,000	2,000	5,000	1,000	1,000
	7	5,000	1,000	5,000	1,000	1,000
	8	0,125	0,125	0,200	1,000	0,125
	9	7,000	7,000	3,000	1,000	7,000
	10	9,000	1,000	5,000	1,000	0,333
	11	5,000	7,000	5,000	1,000	0,143
	12	0,200	0,143	0,167	1,000	5,000
	13	5,000	3,000	0,500	1,000	5,000
	14	0,143	0,143	0,143	1,000	0,143
	15	0,143	0,143	0,143	1,000	2,000
	16	0,143	0,143	0,143	1,000	0,143
	17	0,143	0,143	0,143	1,000	0,143
	18	0,143	0,143	0,143	1,000	0,143
External	1	0,333	0,200	0,333	1,000	1,000
	2	0,333	0,200	0,333	1,000	1,000
	3	0,333	0,333	0,200	0,200	1,000
	4	1,000	0,250	0,333	0,333	1,000
	5	0,167	0,200	0,125	0,125	1,000
	6	5,000	3,000	5,000	1,000	1,000
	7	0,333	0,200	0,333	1,000	1,000
	8	5,000	0,125	0,200	8,000	1,000
	9	0,200	0,500	0,143	0,143	1,000
	10	0,200	3,000	3,000	3,000	1,000
	11	7,000	0,200	0,200	7,000	1,000
	12	0,167	0,143	0,143	0,200	1,000
	13	0,200	0,200	0,200	0,200	1,000
	14	5,000	0,143	0,143	7,000	1,000
	15	0,200	0,143	0,143	0,500	1,000
	16	5,000	0,143	0,143	7,000	1,000
	17	5,000	0,143	0,143	7,000	1,000
	18	5,000	0,143	0,143	7,000	1,000

Lampiran 5: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Human*

Human		PU	PEU	PCS	WM
PU	1	1,000	3,000	3,000	0,333
	2	1,000	1,000	3,000	3,000
	3	1,000	3,000	0,200	3,000
	4	1,000	9,000	0,333	5,000
	5	1,000	7,000	0,143	0,143
	6	1,000	1,000	1,000	1,000
	7	1,000	1,000	1,000	1,000
	8	1,000	0,200	6,000	0,143
	9	1,000	1,000	5,000	0,250
	10	1,000	1,000	1,000	1,000
	11	1,000	5,000	0,143	7,000
	12	1,000	0,167	0,167	0,200
	13	1,000	0,143	0,333	0,200
	14	1,000	7,000	0,143	0,167
	15	1,000	1,000	0,143	0,500
	16	1,000	7,000	0,143	0,167
	17	1,000	7,000	0,143	0,167
	18	1,000	7,000	0,143	0,167
PEU	1	0,333	1,000	5,000	3,000
	2	1,000	1,000	3,000	5,000
	3	0,333	1,000	0,200	1,000
	4	0,111	1,000	0,111	1,000
	5	0,143	1,000	0,143	0,167
	6	1,000	1,000	1,000	1,000
	7	1,000	1,000	1,000	1,000
	8	5,000	1,000	0,167	0,167
	9	1,000	1,000	7,000	0,200
	10	1,000	1,000	1,000	1,000
	11	0,200	1,000	0,143	0,200
	12	6,000	1,000	0,200	5,000
	13	7,000	1,000	7,000	3,000
	14	0,143	1,000	0,143	7,000
	15	1,000	1,000	0,143	1,000
	16	0,143	1,000	0,143	7,000
	17	0,143	1,000	0,143	7,000
	18	0,143	1,000	0,143	7,000
PCS	1	0,333	0,200	1,000	0,333
	2	0,333	0,333	1,000	0,333
	3	5,000	5,000	1,000	1,000
	4	3,000	9,000	1,000	9,000
	5	7,000	7,000	1,000	7,000
	6	1,000	1,000	1,000	1,000
	7	1,000	1,000	1,000	3,000
	8	0,167	6,000	1,000	8,000
	9	0,200	0,143	1,000	0,143
	10	1,000	1,000	1,000	1,000
	11	7,000	7,000	1,000	5,000
	12	6,000	5,000	1,000	5,000
	13	3,000	0,143	1,000	0,200
	14	7,000	7,000	1,000	7,000

Lampiran 5: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Human* (Lanjutan)

Human		PU	PEU	PCS	WM
PCS	15	7,000	7,000	1,000	7,000
	16	7,000	7,000	1,000	7,000
	17	7,000	7,000	1,000	7,000
	18	7,000	7,000	1,000	7,000
WM	1	3,000	0,333	3,000	1,000
	2	0,333	0,200	3,000	1,000
	3	0,333	1,000	1,000	1,000
	4	0,200	1,000	0,111	1,000
	5	7,000	6,000	0,143	1,000
	6	1,000	1,000	1,000	1,000
	7	1,000	1,000	0,333	1,000
	8	7,000	6,000	0,125	1,000
	9	4,000	5,000	7,000	1,000
	10	1,000	1,000	1,000	1,000
	11	0,143	5,000	0,200	1,000
	12	5,000	0,200	0,200	1,000
	13	5,000	0,333	5,000	1,000
	14	6,000	0,143	0,143	1,000
	15	2,000	1,000	0,143	1,000
	16	6,000	0,143	0,143	1,000
	17	6,000	0,143	0,143	1,000
	18	6,000	0,143	0,143	1,000

Keterangan:

PU = *Perceived usefulness*

PEU = *Perceived ease of use*

PCS = *Personal competency and skills*

WM = *Willingness and motivation to use BIM*

Lampiran 6: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Management*

Management		OR	PBO	MS	BIC	PR	ES
OR	1	1,000	0,200	0,333	0,200	0,333	3,000
	2	1,000	0,143	0,333	0,200	0,333	3,000
	3	1,000	1,000	0,333	0,333	1,000	0,333
	4	1,000	1,000	1,000	1,000	1,000	1,000
	5	1,000	0,200	0,167	0,200	0,143	0,167
	6	1,000	1,000	1,000	0,333	0,200	0,333
	7	1,000	0,200	0,250	0,200	4,000	0,167
	8	1,000	0,167	0,143	0,200	5,000	5,000
	9	1,000	0,143	0,143	0,333	1,000	0,333
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	1,000	9,000	0,143	5,000	0,143	0,250
	12	1,000	9,000	0,143	5,000	0,143	0,250
	13	1,000	0,333	3,000	3,000	5,000	0,200
	14	1,000	0,143	6,000	0,143	7,000	7,000
	15	1,000	0,333	6,000	0,333	2,000	7,000
	16	1,000	0,143	6,000	0,143	7,000	7,000
	17	1,000	0,143	6,000	0,143	7,000	7,000
	18	1,000	0,143	6,000	0,143	7,000	7,000
PBO	1	5,000	1,000	5,000	1,000	3,000	5,000
	2	7,000	1,000	5,000	3,000	5,000	5,000
	3	1,000	1,000	0,333	1,000	1,000	0,333
	4	1,000	1,000	1,000	1,000	1,000	1,000
	5	5,000	1,000	6,000	0,200	6,000	7,000
	6	1,000	1,000	1,000	1,000	1,000	0,500
	7	5,000	1,000	0,500	3,000	1,000	0,333
	8	6,000	1,000	0,125	0,125	6,000	0,143
	9	7,000	1,000	7,000	7,000	7,000	7,000
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	0,111	1,000	5,000	0,200	5,000	7,000
	12	0,111	1,000	5,000	0,200	5,000	5,000
	13	3,000	1,000	8,000	8,000	8,000	8,000
	14	7,000	1,000	7,000	7,000	7,000	7,000
	15	3,000	1,000	7,000	2,000	7,000	7,000
	16	7,000	1,000	7,000	7,000	7,000	7,000
	17	7,000	1,000	7,000	7,000	7,000	7,000
	18	7,000	1,000	7,000	7,000	7,000	0,143
MS	1	3,000	0,200	1,000	0,333	0,333	3,000
	2	3,000	0,200	1,000	0,333	0,333	3,000
	3	3,000	3,000	1,000	1,000	3,000	5,000
	4	1,000	1,000	1,000	3,000	6,000	5,000
	5	6,000	0,167	1,000	0,167	7,000	8,000
	6	1,000	1,000	1,000	1,000	1,000	1,000
	7	4,000	2,000	1,000	0,200	0,333	0,500
	8	7,000	8,000	1,000	0,143	4,000	7,000
	9	7,000	0,143	1,000	2,000	3,000	3,000
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	7,000	0,200	1,000	5,000	5,000	0,200
	12	7,000	0,200	1,000	5,000	5,000	5,000

Lampiran 6: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Management* (Lanjutan)

Management		OR	PBO	MS	BIC	PR	ES
MS	13	0,333	0,125	1,000	3,000	5,000	6,000
	14	0,167	0,143	1,000	0,143	0,143	7,000
	15	0,167	0,143	1,000	0,143	0,143	0,500
	16	0,167	0,143	1,000	0,143	0,143	7,000
	17	0,167	0,143	1,000	0,143	0,143	7,000
	18	0,167	0,143	1,000	0,143	7,000	0,143
BIC	1	5,000	1,000	3,000	1,000	3,000	5,000
	2	5,000	0,333	3,000	1,000	3,000	5,000
	3	3,000	1,000	1,000	1,000	1,000	3,000
	4	1,000	1,000	0,333	1,000	1,000	3,000
	5	5,000	5,000	6,000	1,000	8,000	8,000
	6	3,000	1,000	1,000	1,000	1,000	1,000
	7	5,000	0,333	5,000	1,000	0,333	0,333
	8	5,000	8,000	7,000	1,000	0,200	5,000
	9	3,000	0,143	0,500	1,000	2,000	3,000
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	0,200	5,000	0,200	1,000	5,000	0,143
	12	0,200	5,000	0,200	1,000	5,000	0,143
	13	0,333	0,125	0,333	1,000	5,000	3,000
	14	7,000	0,143	7,000	1,000	0,167	7,000
	15	3,000	0,500	7,000	1,000	2,000	7,000
	16	7,000	0,143	7,000	1,000	0,167	7,000
	17	7,000	0,143	7,000	1,000	0,167	7,000
	18	7,000	0,143	7,000	1,000	7,000	7,000
PR	1	3,000	0,333	3,000	0,333	1,000	3,000
	2	3,000	0,200	3,000	0,333	1,000	3,000
	3	1,000	1,000	0,333	1,000	1,000	1,000
	4	1,000	1,000	0,167	1,000	1,000	1,000
	5	7,000	0,167	0,143	0,125	1,000	8,000
	6	5,000	1,000	1,000	1,000	1,000	5,000
	7	0,250	1,000	3,000	3,000	1,000	0,333
	8	0,200	0,167	0,250	5,000	1,000	0,167
	9	1,000	0,143	0,333	0,500	1,000	0,333
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	7,000	0,200	0,200	0,200	1,000	0,200
	12	7,000	0,200	0,200	0,200	1,000	0,200
	13	0,200	0,125	0,200	0,200	1,000	1,000
	14	0,143	0,143	7,000	6,000	1,000	7,000
	15	0,500	0,143	7,000	0,500	1,000	7,000
	16	0,143	0,143	7,000	6,000	1,000	7,000
	17	0,143	0,143	7,000	6,000	1,000	7,000
	18	0,143	0,143	0,143	0,143	1,000	7,000
ES	1	0,333	0,200	0,333	0,200	0,333	1,000
	2	0,333	0,200	0,333	0,200	0,333	1,000
	3	3,000	3,000	0,200	0,333	1,000	1,000
	4	1,000	1,000	0,200	0,333	1,000	1,000
	5	6,000	0,143	0,125	0,125	0,125	1,000
	6	3,000	2,000	1,000	1,000	0,200	1,000

Lampiran 6: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Management* (Lanjutan)

Management		OR	PBO	MS	BIC	PR	ES
ES	7	6,000	3,000	2,000	3,000	3,000	1,000
	8	0,200	7,000	0,143	0,200	6,000	1,000
	9	3,000	0,143	0,333	0,333	3,000	1,000
	10	1,000	1,000	1,000	1,000	1,000	1,000
	11	4,000	0,143	5,000	7,000	5,000	1,000
	12	4,000	0,200	0,200	7,000	5,000	1,000
	13	5,000	0,125	0,167	0,333	1,000	1,000
	14	0,143	0,143	0,143	0,143	0,143	1,000
	15	0,143	0,143	2,000	0,143	0,143	1,000
	16	0,143	0,143	0,143	0,143	0,143	1,000
	17	0,143	0,143	0,143	0,143	0,143	1,000
	18	0,143	7,000	7,000	0,143	0,143	1,000

Keterangan:

OR = *Organizational readiness*

PBO = *Perceived benefits of BIM for organization*

MS = *Management's support*

BIC = *BIM implementation costs*

PR = *Perceived risks*

ES = *Enterprise scale*

Lampiran 7: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Technology*

Technology		FU	T	A	BC	TQ	I	O
FU	1	1,000	3,000	3,000	0,333	0,200	0,333	0,333
	2	1,000	3,000	3,000	0,200	0,200	1,000	1,000
	3	1,000	5,000	3,000	3,000	5,000	7,000	3,000
	4	1,000	3,000	3,000	3,000	3,000	3,000	3,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	7	1,000	0,333	0,200	0,200	0,200	0,200	3,000
	8	1,000	7,000	6,000	0,200	0,200	6,000	4,000
	9	1,000	3,000	1,000	0,333	0,333	3,000	3,000
	10	1,000	3,000	0,200	0,200	0,333	0,200	0,333
	11	1,000	7,000	0,111	5,000	0,143	5,000	0,200
	12	1,000	7,000	0,111	5,000	0,143	5,000	0,200
	13	1,000	0,333	0,333	0,167	0,143	0,167	0,143
	14	1,000	7,000	0,143	6,000	6,000	6,000	5,000
	15	1,000	7,000	7,000	6,000	1,000	6,000	5,000
	16	1,000	7,000	0,143	6,000	6,000	6,000	5,000
	17	1,000	7,000	0,143	6,000	6,000	6,000	5,000
	18	1,000	7,000	0,143	6,000	6,000	6,000	5,000
T	1	0,333	1,000	3,000	0,333	0,200	0,333	3,000
	2	0,333	1,000	1,000	0,333	0,250	0,200	1,000
	3	0,200	1,000	1,000	3,000	1,000	5,000	1,000
	4	0,333	1,000	0,333	0,143	0,333	0,200	1,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	1,000	0,333	0,333	0,333	0,333	0,333
	7	3,000	1,000	0,200	0,200	3,000	0,250	0,333
	8	0,143	1,000	0,200	0,200	0,143	0,143	0,167
	9	0,333	1,000	0,333	0,333	0,333	0,333	3,000
	10	0,333	1,000	0,200	0,200	0,200	0,333	1,000
	11	0,143	1,000	0,200	0,143	0,143	5,000	0,200
	12	0,143	1,000	0,200	0,143	0,143	5,000	0,200
	13	3,000	1,000	2,000	0,333	0,167	1,000	0,143
	14	0,143	1,000	0,143	0,143	0,143	0,143	0,143
	15	0,143	1,000	0,500	0,333	0,143	0,143	0,200
	16	0,143	1,000	0,143	0,143	0,143	0,143	0,143
	17	0,143	1,000	0,143	0,143	0,143	0,143	0,143
	18	0,143	1,000	0,143	0,143	0,143	0,143	0,143
A	1	0,333	0,333	1,000	0,333	0,200	0,200	0,333
	2	0,333	1,000	1,000	0,333	0,200	0,333	0,333
	3	0,333	1,000	1,000	5,000	1,000	1,000	1,000
	4	0,333	3,000	1,000	0,200	0,200	0,200	1,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	3,000	1,000	1,000	1,000	1,000	1,000
	7	5,000	5,000	1,000	0,333	5,000	5,000	5,000
	8	0,167	5,000	1,000	8,000	8,000	0,143	0,200
	9	1,000	3,000	1,000	2,000	0,333	3,000	3,000
	10	5,000	5,000	1,000	1,000	1,000	0,333	3,000
	11	9,000	5,000	1,000	5,000	0,200	0,200	3,000
	12	9,000	5,000	1,000	5,000	0,200	0,200	3,000
	13	3,000	0,500	1,000	0,143	0,111	0,333	0,125
	14	7,000	7,000	1,000	0,200	0,200	0,143	0,143

Lampiran 7: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Technology* (Lanjutan)

Technology		FU	T	A	BC	TQ	I	O
A	15	0,143	2,000	1,000	0,333	0,143	0,143	0,167
	16	7,000	7,000	1,000	0,200	0,200	0,143	0,143
	17	7,000	7,000	1,000	0,200	0,200	0,143	0,143
	18	7,000	7,000	1,000	0,200	0,200	0,143	0,143
BC	1	3,000	3,000	3,000	1,000	0,200	3,000	3,000
	2	5,000	3,000	3,000	1,000	0,200	3,000	3,000
	3	0,333	0,333	0,200	1,000	0,333	1,000	1,000
	4	0,333	7,000	5,000	1,000	1,000	1,000	3,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	3,000	1,000	1,000	1,000	1,000	1,000
	7	5,000	5,000	3,000	1,000	5,000	4,000	4,000
	8	5,000	5,000	0,125	1,000	5,000	7,000	6,000
	9	3,000	3,000	0,500	1,000	0,500	7,000	7,000
	10	5,000	5,000	1,000	1,000	1,000	0,333	1,000
	11	0,200	7,000	0,200	1,000	0,200	5,000	0,200
	12	0,200	7,000	0,200	1,000	0,200	5,000	0,200
	13	6,000	3,000	7,000	1,000	0,333	1,000	0,143
	14	0,167	7,000	5,000	1,000	0,167	0,167	6,000
	15	0,167	3,000	3,000	1,000	0,167	0,333	1,000
	16	0,167	7,000	5,000	1,000	0,167	0,167	6,000
	17	0,167	7,000	5,000	1,000	0,167	0,167	6,000
	18	0,167	7,000	5,000	1,000	0,167	0,167	6,000
TQ	1	5,000	5,000	5,000	5,000	1,000	5,000	5,000
	2	5,000	4,000	5,000	5,000	1,000	3,000	5,000
	3	0,200	1,000	1,000	3,000	1,000	3,000	1,000
	4	0,333	3,000	5,000	1,000	1,000	1,000	5,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	3,000	1,000	1,000	1,000	1,000	1,000
	7	5,000	0,333	0,200	0,200	1,000	4,000	4,000
	8	5,000	7,000	0,125	0,200	1,000	7,000	7,000
	9	3,000	3,000	3,000	2,000	1,000	7,000	7,000
	10	3,000	5,000	1,000	1,000	1,000	0,200	1,000
	11	7,000	7,000	5,000	5,000	1,000	5,000	0,200
	12	7,000	7,000	5,000	5,000	1,000	5,000	0,200
	13	7,000	6,000	9,000	3,000	1,000	5,000	0,333
	14	0,167	7,000	5,000	6,000	1,000	7,000	7,000
	15	1,000	7,000	7,000	6,000	1,000	7,000	7,000
	16	0,167	7,000	5,000	6,000	1,000	7,000	7,000
	17	0,167	7,000	5,000	6,000	1,000	7,000	7,000
	18	0,167	7,000	5,000	6,000	1,000	7,000	7,000
I	1	3,000	3,000	5,000	0,333	0,200	1,000	3,000
	2	1,000	5,000	3,000	0,333	0,333	1,000	3,000
	3	0,143	0,200	1,000	1,000	0,333	1,000	1,000
	4	0,333	5,000	5,000	1,000	1,000	1,000	5,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	3,000	1,000	1,000	1,000	1,000	1,000
	7	5,000	4,000	0,200	0,250	0,250	1,000	4,000
	8	0,167	7,000	7,000	0,143	0,143	1,000	0,167

Lampiran 7: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Technology* (Lanjutan)

Technology		FU	T	A	BC	TQ	I	O
I	9	0,333	3,000	0,333	0,143	0,143	1,000	2,000
	10	5,000	3,000	3,000	3,000	5,000	1,000	3,000
	11	0,200	0,200	5,000	0,200	0,200	1,000	0,143
	12	0,200	0,200	5,000	0,200	0,200	1,000	0,143
	13	6,000	1,000	3,000	1,000	0,200	1,000	0,111
	14	0,167	7,000	7,000	6,000	0,143	1,000	0,167
	15	0,167	7,000	7,000	3,000	0,143	1,000	2,000
	16	0,167	7,000	7,000	6,000	0,143	1,000	0,167
	17	0,167	7,000	7,000	6,000	0,143	1,000	0,167
	18	0,167	7,000	7,000	6,000	0,143	1,000	0,167
O	1	3,000	0,333	3,000	0,333	0,200	0,333	1,000
	2	1,000	1,000	3,000	0,333	0,200	0,333	1,000
	3	0,333	1,000	1,000	1,000	1,000	1,000	1,000
	4	0,333	1,000	1,000	0,333	0,200	0,200	1,000
	5	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	6	1,000	3,000	1,000	1,000	1,000	1,000	1,000
	7	0,333	3,000	0,200	0,250	0,250	0,250	1,000
	8	0,250	6,000	5,000	0,167	0,143	6,000	1,000
	9	0,333	0,333	0,333	0,143	0,143	0,500	1,000
	10	3,000	1,000	0,333	1,000	1,000	0,333	1,000
	11	5,000	5,000	0,333	5,000	5,000	7,000	1,000
	12	5,000	5,000	0,333	5,000	5,000	7,000	1,000
	13	7,000	7,000	8,000	7,000	3,000	9,000	1,000
	14	0,200	7,000	7,000	0,167	0,143	6,000	1,000
	15	0,200	5,000	6,000	1,000	0,143	0,500	1,000
	16	0,200	7,000	7,000	0,167	0,143	6,000	1,000
	17	0,200	7,000	7,000	0,167	0,143	6,000	1,000
	18	0,200	7,000	7,000	0,167	0,143	6,000	1,000

Keterangan:

FU = *Feasibility of using BIM*

T = *Trialability*

A = *Accessibility*

BC = *BIM complexity*

TQ = *Technology quality*

I = *Interoperability*

O = *Observability*

Lampiran 8: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Project*

Project		PSC	PCR	SI	SA
PSC	1	1,000	0,200	3,000	3,000
	2	1,000	1,000	3,000	5,000
	3	1,000	1,000	0,200	0,200
	4	1,000	1,000	1,000	1,000
	5	1,000	1,000	1,000	1,000
	6	1,000	0,200	0,200	0,200
	7	1,000	0,143	7,000	0,200
	8	1,000	0,167	5,000	7,000
	9	1,000	0,333	0,333	0,333
	10	1,000	1,000	1,000	0,333
	11	1,000	0,200	0,143	5,000
	12	1,000	0,200	0,143	5,000
	13	1,000	0,200	3,000	0,333
	14	1,000	7,000	7,000	7,000
	15	1,000	1,000	7,000	7,000
	16	1,000	7,000	7,000	7,000
	17	1,000	7,000	7,000	7,000
	18	1,000	7,000	7,000	7,000
PCR	1	5,000	1,000	5,000	5,000
	2	1,000	1,000	1,000	3,000
	3	1,000	1,000	0,143	0,143
	4	1,000	1,000	1,000	1,000
	5	1,000	1,000	1,000	1,000
	6	5,000	1,000	5,000	3,000
	7	7,000	1,000	0,250	5,000
	8	6,000	1,000	0,143	0,250
	9	3,000	1,000	3,000	2,000
	10	1,000	1,000	1,000	1,000
	11	5,000	1,000	0,143	0,200
	12	5,000	1,000	0,143	0,200
	13	5,000	1,000	7,000	3,000
	14	0,143	1,000	7,000	7,000
	15	1,000	1,000	6,000	7,000
	16	0,143	1,000	7,000	7,000
	17	0,143	1,000	7,000	7,000
	18	0,143	1,000	7,000	7,000
SI	1	0,333	0,200	1,000	1,000
	2	0,333	1,000	1,000	3,000
	3	5,000	7,000	1,000	3,000
	4	1,000	1,000	1,000	1,000
	5	1,000	1,000	1,000	1,000
	6	5,000	0,200	1,000	1,000
	7	0,143	4,000	1,000	5,000
	8	0,200	7,000	1,000	8,000
	9	3,000	0,333	1,000	0,333
	10	1,000	1,000	1,000	0,333
	11	7,000	7,000	1,000	7,000
	12	7,000	7,000	1,000	7,000
	13	0,333	0,143	1,000	0,200
	14	0,143	0,143	1,000	0,167

Lampiran 8: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *Project* (Lanjutan)

Project		PSC	PCR	SI	SA
SI	15	0,143	0,167	1,000	0,333
	16	0,143	0,143	1,000	0,167
	17	0,143	0,143	1,000	0,167
	18	0,143	0,143	1,000	0,167
SA	1	0,333	0,200	1,000	1,000
	2	0,200	0,333	0,333	1,000
	3	5,000	7,000	0,333	1,000
	4	1,000	1,000	1,000	1,000
	5	1,000	1,000	1,000	1,000
	6	5,000	0,333	1,000	1,000
	7	5,000	0,200	0,200	1,000
	8	0,143	4,000	0,125	1,000
	9	3,000	0,500	3,000	1,000
	10	3,000	1,000	3,000	1,000
	11	0,200	5,000	0,143	1,000
	12	0,200	5,000	0,143	1,000
	13	3,000	0,333	5,000	1,000
	14	0,143	0,143	6,000	1,000
	15	0,143	0,143	3,000	1,000
	16	0,143	0,143	6,000	1,000
	17	0,143	0,143	6,000	1,000
	18	0,143	0,143	6,000	1,000

Keterangan:

PSC = *Project scale and complexity*

PCR = *Project/client's requirements*

SI = *Stakeholders' interaction*

SA = *Stakeholder's awareness*

Lampiran 9: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *External*

Kriteria		GS	CL	BP
GS	1	1,000	5,000	3,000
	2	1,000	5,000	3,000
	3	1,000	1,000	5,000
	4	1,000	1,000	1,000
	5	1,000	1,000	1,000
	6	1,000	3,000	0,250
	7	1,000	3,000	0,333
	8	1,000	0,250	0,200
	9	1,000	7,000	2,000
	10	1,000	0,250	3,000
	11	1,000	0,200	0,200
	12	1,000	0,200	0,200
	13	1,000	0,200	0,333
	14	1,000	5,000	0,143
	15	1,000	2,000	0,143
	16	1,000	5,000	0,143
	17	1,000	5,000	0,143
	18	1,000	5,000	0,143
CL	1	0,200	1,000	0,333
	2	0,200	1,000	1,000
	3	1,000	1,000	5,000
	4	1,000	1,000	1,000
	5	1,000	1,000	1,000
	6	0,333	1,000	0,200
	7	0,333	1,000	0,250
	8	4,000	1,000	7,000
	9	0,143	1,000	0,143
	10	4,000	1,000	7,000
	11	5,000	1,000	5,000
	12	5,000	1,000	5,000
	13	5,000	1,000	3,000
	14	0,200	1,000	0,143
	15	0,500	1,000	0,143
	16	0,200	1,000	0,143
	17	0,200	1,000	0,143
	18	0,200	1,000	0,143
BP	1	0,333	3,000	1,000
	2	0,333	1,000	1,000
	3	0,200	0,200	1,000
	4	1,000	1,000	1,000
	5	1,000	1,000	1,000
	6	4,000	5,000	1,000
	7	3,000	4,000	1,000
	8	5,000	0,143	1,000
	9	0,500	7,000	1,000
	10	0,333	0,143	1,000
	11	5,000	0,200	1,000
	12	5,000	0,200	1,000

Lampiran 9: Matriks *Pairwise Comparison* Antar Sub-Kriteria Dalam Kriteria *External* (Lanjutan)

Kriteria		GS	CL	BP
BP	13	3,000	0,333	1,000
	14	7,000	7,000	1,000
	15	7,000	7,000	1,000
	16	7,000	7,000	1,000
	17	7,000	7,000	1,000
	18	7,000	7,000	1,000

Keterangan:

GS = *Government's support*

CL = *Competition levels*

BP = *BIM providers*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria

PU		Tradisional	BIM	PEU		Tradisional	BIM
Tradisional	1	1,000	0,200	Tradisional	1	1,000	3,000
	2	1,000	0,200		2	1,000	5,000
	3	1,000	1,000		3	1,000	5,000
	4	1,000	5,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	0,333		7	1,000	0,333
	8	1,000	6,000		8	1,000	0,200
	9	1,000	0,333		9	1,000	0,333
	10	1,000	1,000		10	1,000	5,000
	11	1,000	0,200		11	1,000	0,200
	12	1,000	0,200		12	1,000	0,200
	13	1,000	3,000		13	1,000	5,000
	14	1,000	0,143		14	1,000	0,167
	15	1,000	0,143		15	1,000	0,167
	16	1,000	0,143		16	1,000	0,167
	17	1,000	0,143		17	1,000	0,167
	18	1,000	0,143		18	1,000	0,167
BIM	1	5,000	1,000	BIM	1	0,333	1,000
	2	5,000	1,000		2	0,200	1,000
	3	1,000	1,000		3	0,200	1,000
	4	0,200	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	3,000	1,000		7	3,000	1,000
	8	0,167	1,000		8	5,000	1,000
	9	3,000	1,000		9	3,000	1,000
	10	1,000	1,000		10	0,200	1,000
	11	5,000	1,000		11	5,000	1,000
	12	5,000	1,000		12	5,000	1,000
	13	0,333	1,000		13	0,200	1,000
	14	7,000	1,000		14	6,000	1,000
	15	7,000	1,000		15	6,000	1,000
	16	7,000	1,000		16	6,000	1,000
	17	7,000	1,000		17	6,000	1,000
	18	7,000	1,000		18	6,000	1,000

Kriteria:

PU = *Perceived usefulness*

PEU = *Perceived ease of use*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

PCS		Tradisional	BIM	WM		Tradisional	BIM
Tradisional	1	1,000	5,000	Tradisional	1	1,000	3,000
	2	1,000	3,000		2	1,000	5,000
	3	1,000	5,000		3	1,000	7,000
	4	1,000	5,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	3,000		7	1,000	0,200
	8	1,000	0,143		8	1,000	0,143
	9	1,000	0,333		9	1,000	0,333
	10	1,000	5,000		10	1,000	0,200
	11	1,000	0,200		11	1,000	7,000
	12	1,000	0,200		12	1,000	7,000
	13	1,000	4,000		13	1,000	5,000
	14	1,000	0,143		14	1,000	0,143
	15	1,000	0,143		15	1,000	0,143
	16	1,000	0,143		16	1,000	0,143
	17	1,000	0,143		17	1,000	0,143
	18	1,000	0,143		18	1,000	0,143
BIM	1	0,200	1,000	BIM	1	0,333	1,000
	2	0,333	1,000		2	0,200	1,000
	3	0,200	1,000		3	0,143	1,000
	4	0,200	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,333	1,000		7	5,000	1,000
	8	7,000	1,000		8	7,000	1,000
	9	3,000	1,000		9	3,000	1,000
	10	0,200	1,000		10	5,000	1,000
	11	5,000	1,000		11	0,143	1,000
	12	5,000	1,000		12	0,143	1,000
	13	0,250	1,000		13	0,200	1,000
	14	7,000	1,000		14	7,000	1,000
	15	7,000	1,000		15	7,000	1,000
	16	7,000	1,000		16	7,000	1,000
	17	7,000	1,000		17	7,000	1,000
	18	7,000	1,000		18	7,000	1,000

Kriteria:

PCS = *Personal competency and skills*

WM = *Willingness and motivation to use BIM*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

OR		Tradisional	BIM	PBO		Tradisional	BIM
Tradisional	1	1,000	3,000	Tradisional	1	1,000	0,200
	2	1,000	3,000		2	1,000	0,143
	3	1,000	3,000		3	1,000	0,333
	4	1,000	5,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	3,000		7	1,000	3,000
	8	1,000	0,143		8	1,000	5,000
	9	1,000	3,000		9	1,000	0,333
	10	1,000	0,200		10	1,000	0,143
	11	1,000	5,000		11	1,000	0,200
	12	1,000	5,000		12	1,000	0,200
	13	1,000	3,000		13	1,000	3,000
	14	1,000	0,200		14	1,000	0,200
	15	1,000	0,200		15	1,000	0,200
	16	1,000	0,200		16	1,000	0,200
	17	1,000	0,200		17	1,000	0,200
	18	1,000	0,200		18	1,000	0,200
BIM	1	0,333	1,000	BIM	1	5,000	1,000
	2	0,333	1,000		2	7,000	1,000
	3	0,333	1,000		3	3,000	1,000
	4	0,200	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,333	1,000		7	0,333	1,000
	8	7,000	1,000		8	0,200	1,000
	9	0,333	1,000		9	3,000	1,000
	10	5,000	1,000		10	7,000	1,000
	11	0,200	1,000		11	5,000	1,000
	12	0,200	1,000		12	5,000	1,000
	13	0,333	1,000		13	0,333	1,000
	14	5,000	1,000		14	5,000	1,000
	15	5,000	1,000		15	5,000	1,000
	16	5,000	1,000		16	5,000	1,000
	17	5,000	1,000		17	5,000	1,000
	18	5,000	1,000		18	5,000	1,000

Keterangan:

OR = *Organizational readiness*

PBO = *Perceived benefits of BIM for organization*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

MS		Tradisional	BIM	BIC		Tradisional	BIM
Tradisional	1	1,000	3,000	Tradisional	1	1,000	5,000
	2	1,000	3,000		2	1,000	5,000
	3	1,000	3,000		3	1,000	5,000
	4	1,000	5,000		4	1,000	9,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	4,000		7	1,000	0,333
	8	1,000	5,000		8	1,000	0,125
	9	1,000	0,333		9	1,000	3,000
	10	1,000	0,200		10	1,000	0,143
	11	1,000	7,000		11	1,000	7,000
	12	1,000	7,000		12	1,000	7,000
	13	1,000	2,000		13	1,000	6,000
	14	1,000	0,200		14	1,000	0,333
	15	1,000	0,200		15	1,000	0,333
	16	1,000	0,200		16	1,000	0,333
	17	1,000	0,200		17	1,000	0,333
	18	1,000	0,200		18	1,000	0,333
BIM	1	0,333	1,000	BIM	1	0,200	1,000
	2	0,333	1,000		2	0,200	1,000
	3	0,333	1,000		3	0,200	1,000
	4	0,200	1,000		4	0,111	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,250	1,000		7	3,000	1,000
	8	0,200	1,000		8	8,000	1,000
	9	3,000	1,000		9	0,333	1,000
	10	5,000	1,000		10	7,000	1,000
	11	0,143	1,000		11	0,143	1,000
	12	0,143	1,000		12	0,143	1,000
	13	0,500	1,000		13	0,167	1,000
	14	5,000	1,000		14	3,000	1,000
	15	5,000	1,000		15	3,000	1,000
	16	5,000	1,000		16	3,000	1,000
	17	5,000	1,000		17	3,000	1,000
	18	5,000	1,000		18	3,000	1,000

Keterangan:

MS = *Management's support*

BIC = *BIM implementation costs*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

PR		Tradisional	BIM	ES		Tradisional	BIM
Tradisional	1	1,000	3,000	Tradisional	1	1,000	0,200
	2	1,000	5,000		2	1,000	0,333
	3	1,000	3,000		3	1,000	3,000
	4	1,000	7,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	5,000		7	1,000	0,250
	8	1,000	0,125		8	1,000	0,143
	9	1,000	3,000		9	1,000	3,000
	10	1,000	0,143		10	1,000	0,143
	11	1,000	9,000		11	1,000	7,000
	12	1,000	9,000		12	1,000	7,000
	13	1,000	7,000		13	1,000	1,000
	14	1,000	0,200		14	1,000	0,200
	15	1,000	0,200		15	1,000	0,200
	16	1,000	0,200		16	1,000	0,200
	17	1,000	0,200		17	1,000	0,200
	18	1,000	0,200		18	1,000	0,167
BIM	1	0,333	1,000	BIM	1	5,000	1,000
	2	0,200	1,000		2	3,000	1,000
	3	0,333	1,000		3	0,333	1,000
	4	0,143	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,200	1,000		7	4,000	1,000
	8	8,000	1,000		8	7,000	1,000
	9	0,333	1,000		9	0,333	1,000
	10	7,000	1,000		10	7,000	1,000
	11	0,111	1,000		11	0,143	1,000
	12	0,111	1,000		12	0,143	1,000
	13	0,143	1,000		13	1,000	1,000
	14	5,000	1,000		14	5,000	1,000
	15	5,000	1,000		15	5,000	1,000
	16	5,000	1,000		16	5,000	1,000
	17	5,000	1,000		17	5,000	1,000
	18	5,000	1,000		18	6,000	1,000

Keterangan:

PR = *Perceived risks*

ES = *Enterprise scale*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

FU		Tradisional	BIM	T		Tradisional	BIM
Tradisional	1	1,000	0,200	Tradisional	1	1,000	0,200
	2	1,000	0,200		2	1,000	0,333
	3	1,000	0,200		3	1,000	0,333
	4	1,000	5,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	0,250		7	1,000	0,200
	8	1,000	0,167		8	1,000	0,125
	9	1,000	3,000		9	1,000	3,000
	10	1,000	0,200		10	1,000	5,000
	11	1,000	5,000		11	1,000	0,143
	12	1,000	5,000		12	1,000	0,143
	13	1,000	0,333		13	1,000	1,000
	14	1,000	0,167		14	1,000	0,200
	15	1,000	0,200		15	1,000	0,200
	16	1,000	0,167		16	1,000	0,200
	17	1,000	0,167		17	1,000	0,200
	18	1,000	0,200		18	1,000	0,250
BIM	1	5,000	1,000	BIM	1	5,000	1,000
	2	5,000	1,000		2	3,000	1,000
	3	5,000	1,000		3	3,000	1,000
	4	0,200	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	4,000	1,000		7	5,000	1,000
	8	6,000	1,000		8	8,000	1,000
	9	0,333	1,000		9	0,333	1,000
	10	5,000	1,000		10	0,200	1,000
	11	0,200	1,000		11	7,000	1,000
	12	0,200	1,000		12	7,000	1,000
	13	3,000	1,000		13	1,000	1,000
	14	6,000	1,000		14	5,000	1,000
	15	5,000	1,000		15	5,000	1,000
	16	6,000	1,000		16	5,000	1,000
	17	6,000	1,000		17	5,000	1,000
	18	5,000	1,000		18	4,000	1,000

Keterangan:

FU = *Feasibility of using BIM*

T = *Trialability*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

A		Tradisional	BIM	BC		Tradisional	BIM
Tradisional	1	1,000	0,333	Tradisional	1	1,000	3,000
	2	1,000	0,333		2	1,000	5,000
	3	1,000	5,000		3	1,000	0,143
	4	1,000	5,000		4	1,000	5,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	3,000		7	1,000	3,000
	8	1,000	5,000		8	1,000	0,125
	9	1,000	3,000		9	1,000	3,000
	10	1,000	5,000		10	1,000	5,000
	11	1,000	0,200		11	1,000	7,000
	12	1,000	0,200		12	1,000	7,000
	13	1,000	0,250		13	1,000	5,000
	14	1,000	4,000		14	1,000	4,000
	15	1,000	4,000		15	1,000	4,000
	16	1,000	4,000		16	1,000	4,000
	17	1,000	4,000		17	1,000	4,000
	18	1,000	4,000		18	1,000	4,000
BIM	1	3,000	1,000	BIM	1	0,333	1,000
	2	3,000	1,000		2	0,200	1,000
	3	0,200	1,000		3	7,000	1,000
	4	0,200	1,000		4	0,200	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,333	1,000		7	0,333	1,000
	8	0,200	1,000		8	8,000	1,000
	9	0,333	1,000		9	0,333	1,000
	10	0,200	1,000		10	0,200	1,000
	11	5,000	1,000		11	0,143	1,000
	12	5,000	1,000		12	0,143	1,000
	13	4,000	1,000		13	0,200	1,000
	14	0,250	1,000		14	0,250	1,000
	15	0,250	1,000		15	0,250	1,000
	16	0,250	1,000		16	0,250	1,000
	17	0,250	1,000		17	0,250	1,000
	18	0,250	1,000		18	0,250	1,000

Keterangan:

A = *Accessibility*

BC = *BIM complexity*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

TQ		Tradisional	BIM	I		Tradisional	BIM
Tradisional	1	1,000	0,200	Tradisional	1	1,000	0,333
	2	1,000	0,200		2	1,000	0,333
	3	1,000	1,000		3	1,000	0,200
	4	1,000	5,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	0,167		7	1,000	0,333
	8	1,000	0,125		8	1,000	5,000
	9	1,000	0,333		9	1,000	3,000
	10	1,000	0,200		10	1,000	0,200
	11	1,000	0,143		11	1,000	0,200
	12	1,000	0,143		12	1,000	0,200
	13	1,000	0,500		13	1,000	0,333
	14	1,000	0,143		14	1,000	0,143
	15	1,000	0,143		15	1,000	0,143
	16	1,000	0,143		16	1,000	0,143
	17	1,000	0,143		17	1,000	0,143
	18	1,000	0,143		18	1,000	0,143
BIM	1	5,000	1,000	BIM	1	3,000	1,000
	2	5,000	1,000		2	3,000	1,000
	3	1,000	1,000		3	5,000	1,000
	4	0,200	1,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	6,000	1,000		7	3,000	1,000
	8	8,000	1,000		8	0,200	1,000
	9	3,000	1,000		9	0,333	1,000
	10	5,000	1,000		10	5,000	1,000
	11	7,000	1,000		11	5,000	1,000
	12	7,000	1,000		12	5,000	1,000
	13	2,000	1,000		13	3,000	1,000
	14	7,000	1,000		14	7,000	1,000
	15	7,000	1,000		15	7,000	1,000
	16	7,000	1,000		16	7,000	1,000
	17	7,000	1,000		17	7,000	1,000
	18	7,000	1,000		18	7,000	1,000

Keterangan:

TQ = *Technology quality*

I = *Interoperability*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

O		Tradisional	BIM	PSC		Tradisional	BIM
Tradisional	1	1,000	0,333	Tradisional	1	1,000	0,333
	2	1,000	0,333		2	1,000	0,333
	3	1,000	1,000		3	1,000	5,000
	4	1,000	1,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	0,333		7	1,000	4,000
	8	1,000	5,000		8	1,000	0,125
	9	1,000	3,000		9	1,000	0,333
	10	1,000	1,000		10	1,000	0,333
	11	1,000	0,143		11	1,000	5,000
	12	1,000	0,143		12	1,000	5,000
	13	1,000	0,250		13	1,000	3,000
	14	1,000	0,143		14	1,000	0,143
	15	1,000	0,143		15	1,000	0,143
	16	1,000	0,143		16	1,000	0,143
	17	1,000	0,143		17	1,000	0,143
	18	1,000	0,143		18	1,000	0,143
BIM	1	3,000	1,000	BIM	1	3,000	1,000
	2	3,000	1,000		2	3,000	1,000
	3	1,000	1,000		3	0,200	1,000
	4	1,000	1,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	3,000	1,000		7	0,250	1,000
	8	0,200	1,000		8	8,000	1,000
	9	0,333	1,000		9	3,000	1,000
	10	1,000	1,000		10	3,000	1,000
	11	7,000	1,000		11	0,200	1,000
	12	7,000	1,000		12	0,200	1,000
	13	4,000	1,000		13	0,333	1,000
	14	7,000	1,000		14	7,000	1,000
	15	7,000	1,000		15	7,000	1,000
	16	7,000	1,000		16	7,000	1,000
	17	7,000	1,000		17	7,000	1,000
	18	7,000	1,000		18	7,000	1,000

Keterangan:

O = *Observability*

PSC = *Project scale and complexity*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

PCR		Tradisional	BIM	SI		Tradisional	BIM
Tradisional	1	1,000	5,000	Tradisional	1	1,000	5,000
	2	1,000	5,000		2	1,000	3,000
	3	1,000	1,000		3	1,000	3,000
	4	1,000	1,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	0,200		7	1,000	2,000
	8	1,000	0,125		8	1,000	0,125
	9	1,000	3,000		9	1,000	0,333
	10	1,000	5,000		10	1,000	5,000
	11	1,000	0,143		11	1,000	7,000
	12	1,000	0,143		12	1,000	7,000
	13	1,000	3,000		13	1,000	2,000
	14	1,000	0,143		14	1,000	0,200
	15	1,000	0,143		15	1,000	0,200
	16	1,000	0,143		16	1,000	0,200
	17	1,000	0,143		17	1,000	0,167
	18	1,000	0,143		18	1,000	0,200
BIM	1	0,200	1,000	BIM	1	0,200	1,000
	2	0,200	1,000		2	0,333	1,000
	3	1,000	1,000		3	0,333	1,000
	4	1,000	1,000		4	1,000	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	5,000	1,000		7	0,500	1,000
	8	8,000	1,000		8	8,000	1,000
	9	0,333	1,000		9	3,000	1,000
	10	0,200	1,000		10	0,200	1,000
	11	7,000	1,000		11	0,143	1,000
	12	7,000	1,000		12	0,143	1,000
	13	0,333	1,000		13	0,500	1,000
	14	7,000	1,000		14	5,000	1,000
	15	7,000	1,000		15	5,000	1,000
	16	7,000	1,000		16	5,000	1,000
	17	7,000	1,000		17	6,000	1,000
	18	7,000	1,000		18	5,000	1,000

Keterangan:

PCR = *Project/client's requirements*

SI = *Stakeholders' interaction*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

SA		Tradisional	BIM	GS		Tradisional	BIM
Tradisional	1	1,000	3,000	Tradisional	1	1,000	3,000
	2	1,000	5,000		2	1,000	3,000
	3	1,000	0,333		3	1,000	1,000
	4	1,000	3,000		4	1,000	3,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	2,000		7	1,000	3,000
	8	1,000	0,143		8	1,000	5,000
	9	1,000	0,333		9	1,000	0,333
	10	1,000	5,000		10	1,000	3,000
	11	1,000	5,000		11	1,000	0,200
	12	1,000	5,000		12	1,000	0,200
	13	1,000	3,000		13	1,000	3,000
	14	1,000	0,200		14	1,000	0,143
	15	1,000	0,200		15	1,000	0,143
	16	1,000	0,200		16	1,000	0,143
	17	1,000	0,200		17	1,000	0,143
	18	1,000	0,200		18	1,000	0,143
BIM	1	0,333	1,000	BIM	1	0,333	1,000
	2	0,200	1,000		2	0,333	1,000
	3	3,000	1,000		3	1,000	1,000
	4	0,333	1,000		4	0,333	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,500	1,000		7	0,333	1,000
	8	7,000	1,000		8	0,200	1,000
	9	3,000	1,000		9	3,000	1,000
	10	0,200	1,000		10	0,333	1,000
	11	0,200	1,000		11	5,000	1,000
	12	0,200	1,000		12	5,000	1,000
	13	0,333	1,000		13	0,333	1,000
	14	5,000	1,000		14	7,000	1,000
	15	5,000	1,000		15	7,000	1,000
	16	5,000	1,000		16	7,000	1,000
	17	5,000	1,000		17	7,000	1,000
	18	5,000	1,000		18	7,000	1,000

Keterangan:

SA = *Stakeholder's awareness*

GS = *Government's support*

Lampiran 10: Matriks *Pairwise Comparison* Alternatif Terhadap Setiap Sub-Kriteria (Lanjutan)

CL		Tradisional	BIM	BP		Tradisional	BIM
Tradisional	1	1,000	3,000	Tradisional	1	1,000	0,333
	2	1,000	3,000		2	1,000	0,333
	3	1,000	1,000		3	1,000	0,333
	4	1,000	3,000		4	1,000	3,000
	5	1,000	1,000		5	1,000	1,000
	6	1,000	0,200		6	1,000	0,200
	7	1,000	3,000		7	1,000	0,200
	8	1,000	0,143		8	1,000	0,111
	9	1,000	0,333		9	1,000	3,000
	10	1,000	0,200		10	1,000	0,200
	11	1,000	0,143		11	1,000	0,200
	12	1,000	0,143		12	1,000	0,200
	13	1,000	1,000		13	1,000	0,333
	14	1,000	0,143		14	1,000	0,143
	15	1,000	0,143		15	1,000	0,143
	16	1,000	0,143		16	1,000	0,143
	17	1,000	0,143		17	1,000	0,143
	18	1,000	0,143		18	1,000	0,143
BIM	1	0,333	1,000	BIM	1	3,000	1,000
	2	0,333	1,000		2	3,000	1,000
	3	1,000	1,000		3	3,000	1,000
	4	0,333	1,000		4	0,333	1,000
	5	1,000	1,000		5	1,000	1,000
	6	5,000	1,000		6	5,000	1,000
	7	0,333	1,000		7	5,000	1,000
	8	7,000	1,000		8	9,000	1,000
	9	3,000	1,000		9	0,333	1,000
	10	5,000	1,000		10	5,000	1,000
	11	7,000	1,000		11	5,000	1,000
	12	7,000	1,000		12	5,000	1,000
	13	1,000	1,000		13	3,000	1,000
	14	7,000	1,000		14	7,000	1,000
	15	7,000	1,000		15	7,000	1,000
	16	7,000	1,000		16	7,000	1,000
	17	7,000	1,000		17	7,000	1,000
	18	7,000	1,000		18	7,000	1,000

Keterangan:

CL = *Competition levels*

BP = *BIM providers*

Lampiran 11: Contoh Perhitungan *Geometric Mean*

BP		Tradisional	BIM
Tradisional	1	1,000	0,333
	2	1,000	0,333
	3	1,000	0,333
	4	1,000	3,000
	5	1,000	1,000
	6	1,000	0,200
	7	1,000	0,200
	8	1,000	0,111
	9	1,000	3,000
	10	1,000	0,200
	11	1,000	0,200
	12	1,000	0,200
	13	1,000	0,333
	14	1,000	0,143
	15	1,000	0,143
	16	1,000	0,143
	17	1,000	0,143
	18	1,000	0,143
BIM	1	3,000	1,000
	2	3,000	1,000
	3	3,000	1,000
	4	0,333	1,000
	5	1,000	1,000
	6	5,000	1,000
	7	5,000	1,000
	8	9,000	1,000
	9	0,333	1,000
	10	5,000	1,000
	11	5,000	1,000
	12	5,000	1,000
	13	3,000	1,000
	14	7,000	1,000
	15	7,000	1,000
	16	7,000	1,000
	17	7,000	1,000
	18	7,000	1,000

Geometric mean tradisional – BIM:

$\sqrt[18]{0{,}333^4 \times 3^2 \times 1^4 \times 0{,}2^5 \times 0{,}111 \times 0{,}143^5} = 0{,}29178 \sim 0{,}292$

Geometric mean BIM-tradisional

$\sqrt[18]{3^4 \times 0{,}333^2 \times 1 \times 5^5 \times 9 \times 7^5} = 3{,}42678 \sim 3{,}427$

BP	Tradisional	BIM
Tradisional	1,000	0,292
BIM	3,427	1,000

Lampiran 12: Contoh Perhitungan Bobot Model

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*
Human	1,000	1,775	0,315	1,014	1,169
Management	0,563	1,000	0,528	1,621	3,877
Technology	3,173	1,896	1,000	1,483	3,757
Project	0,986	0,617	0,674	1,000	0,882
External	0,855	0,258	0,266	1,134	1,000
Jumlah					

1. Hitung *geometric mean* setiap baris pada matriks

Geometric mean Human = $\sqrt[5]{1 \times 1{,}775 \times 0{,}315 \times 1{,}014 \times 1{,}169}$ = 0,921

Geometric mean Management = $\sqrt[5]{0{,}563 \times 1 \times 0{,}528 \times 1{,}621 \times 3{,}887}$ = 1,133

Geometric mean Technology = $\sqrt[5]{3{,}173 \times 1{,}896 \times 1 \times 1{,}483 \times 3{,}757}$ = 2,019

Geometric mean Project = $\sqrt[5]{0{,}986 \times 0{,}617 \times 0{,}674 \times 1 \times 0{,}882}$ = 0,816

Geometric mean External = $\sqrt[5]{0{,}855 \times 0{,}258 \times 0{,}266 \times 1{,}134 \times 1}$ = 0,582

2. Hitung jumlah dari semua *geometric mean*

Jumlah = $0{,}921 + 1{,}133 + 2{,}019 + 0{,}816 + 0{,}582 = 5{,}471$

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*	*Geo Mean*
Human	1,000	1,775	0,315	1,014	1,169	0,921
Management	0,563	1,000	0,528	1,621	3,877	1,133
Technology	3,173	1,896	1,000	1,483	3,757	2,019
Project	0,986	0,617	0,674	1,000	0,882	0,816
External	0,855	0,258	0,266	1,134	1,000	0,582
Jumlah						5,471

3. Lakukan normalisasi pada hasil *geometric mean* dengan cara membaginya dengan jumlah dari *geometric mean*

Bobot *Human* = $\frac{0{,}921}{5{,}471}$ = $0{,}168$

Bobot *Management* = $\frac{1{,}133}{5{,}471}$ = $0{,}207$

Bobot *Technology* = $\frac{2{,}019}{5{,}471}$ = $0{,}369$

Bobot *Project* = $\frac{0{,}816}{5{,}471}$ = $0{,}149$

Bobot *External* = $\frac{0{,}582}{5{,}471}$ = $0{,}106$

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*	*Geo Mean*	Bobot
Human	1,000	1,775	0,315	1,014	1,169	0,921	0,168
Management	0,563	1,000	0,528	1,621	3,877	1,133	0,207
Technology	3,173	1,896	1,000	1,483	3,757	2,019	0,369
Project	0,986	0,617	0,674	1,000	0,882	0,816	0,149
External	0,855	0,258	0,266	1,134	1,000	0,582	0,106
Jumlah						5,471	1,000

Lampiran 13: Contoh Perhitungan *Maximum Eigenvalue*

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*	Bobot
Human	1,000	1,775	0,315	1,014	1,169	0,168
Management	0,563	1,000	0,528	1,621	3,877	0,207
Technology	3,173	1,896	1,000	1,483	3,757	0,369
Project	0,986	0,617	0,674	1,000	0,882	0,149
External	0,855	0,258	0,266	1,134	1,000	0,106

1. Hitung *eigenvalue* pada tiap baris matriks

Eigenvalue Human = $(1 \times 0{,}168) + (1{,}775 \times 0{,}207) + (0{,}315 \times 0{,}369) + (1{,}014 \times 0{,}149) + (1{,}169 \times 0{,}106) = 0{,}928$

Eigenvalue Management = $(0{,}563 \times 0{,}168) + (1 \times 0{,}207) + (0{,}528 \times 0{,}369) + (1{,}621 \times 0{,}149) + (3{,}877 \times 0{,}106) = 1{,}151$

Eigenvalue Technology = $(3{,}173 \times 0{,}168) + (1{,}896 \times 0{,}207) + (1 \times 0{,}369) + (1{,}483 \times 0{,}149) + (3{,}757 \times 0{,}106) = 1{,}917$

Eigenvalue Project = $(0{,}986 \times 0{,}168) + (0{,}617 \times 0{,}207) + (0{,}674 \times 0{,}369) + (1 \times 0{,}149) + (0{,}882 \times 0{,}106) = 0{,}786$

Eigenvalue External = $(0{,}855 \times 0{,}168) + (0{,}258 \times 0{,}207) + (0{,}266 \times 0{,}369) + (1{,}134 \times 0{,}149) + (1 \times 0{,}106) = 0{,}571$

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*	Bobot	*Eigenvalue*
Human	1,000	1,775	0,315	1,014	1,169	0,168	0,928
Management	0,563	1,000	0,528	1,621	3,877	0,207	1,151
Technology	3,173	1,896	1,000	1,483	3,757	0,369	1,917
Project	0,986	0,617	0,674	1,000	0,882	0,149	0,786
External	0,855	0,258	0,266	1,134	1,000	0,106	0,571

2. Hitung *maximum eigenvalue*

Maximum eigenvalue = $\frac{\sum \frac{XW}{W}}{n} = \frac{\frac{0{,}928}{0{,}168} + \frac{1{,}151}{0{,}207} + \frac{1{,}917}{0{,}369} + \frac{0{,}786}{0{,}149} + \frac{0{,}571}{0{,}106}}{5} = 5{,}380$

Kriteria	*Human*	*Management*	*Technology*	*Project*	*External*	*Eigenvalue*	*Max. Eigen*
Human	1,000	1,775	0,315	1,014	1,169	0,928	5,380
Management	0,563	1,000	0,528	1,621	3,877	1,151	
Technology	3,173	1,896	1,000	1,483	3,757	1,917	
Project	0,986	0,617	0,674	1,000	0,882	0,786	
External	0,855	0,258	0,266	1,134	1,000	0,571	

Lampiran 14: Contoh Perhitungan Uji Konsistensi

Matriks	Jumlah	*Max. Eigen*
Kriteria	5	5,380
Human	4	4,218
Management	6	6,146
Technology	7	7,414
Project	4	4,022
External	3	3,063

1. Hitung *Consistency Index* (CI)

$CI = \frac{\lambda_{max}-n}{n-1}$

CI Kriteria = $\frac{5,380-5}{5-1} = 0,095$

CI *Human* = $\frac{4,218-4}{4-1} = 0,073$

CI *Management* = $\frac{6,146-6}{6-1} = 0,029$

CI *Technology* = $\frac{7,414-7}{7-1} = 0,069$

CI *Project* = $\frac{4,022-4}{4-1} = 0,007$

CI *External* = $\frac{3,063-3}{3-1} = 0,031$

2. Hitung *Consistency Ratio* (CR)

n	1	2	3	4	5	6	7	8	9	10
RI	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49

$CR = \frac{CI}{RI}$

CR Kriteria = $\frac{0,095}{1,12} = 0,085 < 0,01$ (Konsisten)

CR *Human* = $\frac{0,073}{0,9} = 0,081 < 0,01$ (Konsisten)

CR *Management* = $\frac{0,029}{1,24} = 0,024 < 0,01$ (Konsisten)

CR *Technology* = $\frac{0,069}{1,32} = 0,052 < 0,01$ (Konsisten)

CR *Project* = $\frac{0,007}{0,9} = 0,008 < 0,01$ (Konsisten)

CR *External* = $\frac{0,031}{0,58} = 0,054 < 0,01$ (Konsisten)

Matriks	n	Max. Eigen	CI	CR	Evaluasi
K-K	5	5,380	0,095	0,085	Konsisten
Human	4	4,218	0,073	0,081	Konsisten
Management	6	6,146	0,029	0,024	Konsisten
Technology	7	7,414	0,069	0,052	Konsisten
Project	4	4,022	0,007	0,008	Konsisten
External	3	3,063	0,031	0,054	Konsisten