Response and perspective towards Resilient Smart Glove V2 (RSGV2): Implementation at industry and different nature of businesses.

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Resilient Smart Glove V2 (RSGV2)

- Comes with heart beat detector to monitor user’s heart rate so that supervisor can take immediate action in case of emergency.
- **Withstand high temperature** and **cut resistant** and also can aid the workers to carry out task easily by adding **LED**.
- GPS tracker is used to track the exactly location of the user.
Development of Resilient Smart Glove V2 (RSGV2)

Smart board in enclose casing embedded with LED, accelerometer sensor, heartbeat sensor and GPS sensor

Glove

Smart Board Bottom View - Location of the Heart rate sensor

Smart Board Top View - Location of GPS, Accelerometer, LDR and LED

RSGV2 used dongle for interface between Board sensor and PC

Visual Basic (VB) Platform for PC Base of RSGV2
RESEARCH OBJECTIVES

1. Investigate the effectiveness of Resilient Smart Glove V2 (RSGV2) in different nature of business which is construction, aviation, trading and manufacturing.

2. Determine the perception of the industrial participants about RSGV2.

3. Determine overall review from four different nature of business regarding RSGV2.
METHODOLOGY

• The questionnaire was distributed to four (4) different selected nature of business which based in Malaysia that involved in the product testing:

  - Company 1: Construction
  - Company 2: Aviation
  - Company 3: Trading
  - Company 4: Manufacturing

• The questionnaires used in this study comprises of 4 relevant sections:
  - Section A – RSGV2 design (5 items)
  - Section B – RSGV2 system implementation (5 items)
  - Section C – RSGV2 feedback (5 items)
  - Section D – Industry review in term of RSGV2 system, hardware, Real Time Application (RTA)
• Likert scale 1 to 5 to measure respondents' feedback on each item submitted for section A and B.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>1</td>
</tr>
<tr>
<td>Not Satisfied</td>
<td>2</td>
</tr>
<tr>
<td>Satisfied</td>
<td>3</td>
</tr>
<tr>
<td>Good</td>
<td>4</td>
</tr>
<tr>
<td>Excellent</td>
<td>5</td>
</tr>
</tbody>
</table>

• This study applied quantitative data analysis. Data obtained were analyzed using Statistical Package for Social Science (SPSS) Version 23.0 by using techniques such as frequency and descriptive analysis.
METHODOLOGY

• The definition of mean interpretation is based on the range of mean scores as shown below:

<table>
<thead>
<tr>
<th>Mean Score Range</th>
<th>Mean Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 – 1.80</td>
<td>Poor</td>
</tr>
<tr>
<td>1.81 – 2.60</td>
<td>Not Satisfied</td>
</tr>
<tr>
<td>2.61 – 3.40</td>
<td>Satisfied</td>
</tr>
<tr>
<td>3.41 – 4.20</td>
<td>Good</td>
</tr>
<tr>
<td>4.21 – 5.00</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

• In Section C, for feedback from the responders were asked to choose either “yes” or “no”.

• In Section D, the survey asked the responders to write few reviews according to RSGV2 system, hardware and Real Time Application (RTA).
It is easy to use the glove during practical work because it is user-friendly.

I felt comfortable when using this glove.

The glove is high quality.

The glove is eco-friendly since it is washable and can be re-used.

Using this glove can enhance the productivity in practical work.

Section A: RSGV2 design

Mean score: 4.50

Mean score: 3.75

Mean score: 4.00

Mean score: 4.00

Mean score: 3.75
The information provided from the system is easy to understand.

It is easy to understand the connection between the glove and the system.

The system gave messages that clearly told me how to act.

The system gives advantage to the users especially regarding to safety.

It was easy to learn about the system.

Section B – RSGV2 system implementation

Mean score: 4.00

Mean score: 4.25

Mean score: 4.00

Mean score: 4.25

Mean score: 4.25
Section C - RSGV2 feedback

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does this new technology we provide in this product make your life</td>
</tr>
<tr>
<td>easier?</td>
</tr>
<tr>
<td>Do you think this product will ease you in completing your task?</td>
</tr>
<tr>
<td>I think the product is a good purchase.</td>
</tr>
<tr>
<td>I am likely to recommend the product to others.</td>
</tr>
<tr>
<td>Overall, did you satisfied with this new product</td>
</tr>
</tbody>
</table>
# RESULTS AND DISCUSSIONS (SECTION D)

- Overall industry review from FOUR (4) industry and different nature of businesses regarding RSGV2

<table>
<thead>
<tr>
<th>System</th>
<th>Uses Arduino board to control sequence of the programming.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The transceiver might be upgraded into using radio frequency connection for optimum of mapping</td>
</tr>
<tr>
<td></td>
<td>The appliances box that attached on the gloves might be upgraded to put LCD for display heartbeat rate.</td>
</tr>
</tbody>
</table>
Hardware

- The glove is made of Kevlar material and it is resistance to cutting and high temperature heat.
- These features are good enough to protect user when doing heavy machining job especially in sheet metal workshop.
- It would be great if chemical resistance features to be add on and made the gloves all multipurpose duty.
RESULTS AND DISCUSSIONS (SECTION D)

| Real Time Application (RTA) | • It is really convenient to wear and feel comfortable and safe due to its safety features and material made.  
|                           | • I can still feel my hand and can grab things tightly without slippery and still can feel the things |
### Review conclusion

- The gloves are very innovative and has potential, simply because it can help worker to do heavy work safe and sound.
- My review as above for the systems, hardware, and real time application to be considered perhaps to further improve Resilient Smart Glove V2 (RSG)
CONCLUSIONS AND RECOMMENDATIONS

• Design and system implementation on RSGV2 among four different nature businesses achieved above satisfaction where the mean score range is 3.75 to 4.50

• Respondents were also satisfied with RSGV2 development and willing to recommend the innovation to their colleague and also others industry.

• A very positive feedback also acquired from the respondents that might be considered for further improvement for future development of RSGV2.

• Some of the recommendations that can be considered for further development of RSGV2 are improving the material of the glove that can withstand chemical resistance, further enhancing personnel tracking system, repeat signal processing system and display devices attachment.